City of Seattle Budget Office

Capital Improvement Program Study of Seattle Transportation (SeaTran)

Final Report

September 6, 2001

City of Seattle Budget Office

Capital Improvement Program Study of Seattle Transportation (SeaTran)

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Executive Summary

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This executive summary presents the results of a study of the Capital Improvement Program (CIP) of the City of Seattle Department of Transportation (SeaTran). The body of the report contains the detail and examples that support the conclusions summarized here.

The City defined a series of study objectives. These objectives involved describing current practices and evaluating some of them. To meet the objectives of the study, quantitative and qualitative analyses were completed through comprehensive interviews, data analysis, and a best management practices survey. A steering committee of City Budget Office, SeaTran, Strategic Planning Office, City Auditor, and City Council staff provided oversight and direction for the study.

The study is organized into the following three areas:

- **CIP development** refers to the planning and needs analysis that generates a list of potential improvement projects that are prioritized and then selected for inclusion in the City's CIP.
- **CIP program delivery and project management** is the process through which the projects specified in the CIP are designed and constructed.
- **CIP program monitoring and reporting** are tools used by SeaTran for both internal and external communication.

A. CIP Development

Study Objectives	Study Summary
• Determine how CIP projects are developed including planning, scope development, and cost estimation.	• Project development processes vary according to project type. The process is depicted on pages 34 and 35. For mobility projects, scoping and cost estimation are performed on an ad hoc basis during the grant writing process. The study recommendations address improvements to scoping and cost estimation.
• Evaluate how projects are prioritized and how SeaTran ensures that projects selected for implementation are cost-effective from a lifecycle perspective.	• Major maintenance and safety projects have defined, technically driven prioritization procedures that address lifecycle cost-effectiveness. These procedures reflect standard industry practice. The study recommendations address improvements for scoping and prioritizing mobility projects.

Study Objectives	Study Summary
• Assess to what extent SeaTran should allow availability of restricted funding (grants, loans) to influence the projects undertaken.	• Given the absence of other funding sources for mobility projects, SeaTran's goal of maximizing outside funding is reasonable. However, SeaTran should ensure that policy priorities determine the projects for which the Department seeks grant funding.

1. Findings

- Departmental program goals and priorities across different categories are clear and policy driven.
- Overall CIP needs, funding requirements, and outcomes are not explicitly measured and communicated in the CIP.
- The project prioritization process for mobility projects is not transparent. A gap exists between the planning process and the CIP prioritization process for mobility projects.
- The project prioritization process has clear, well founded technical procedures for major maintenance and safety projects.
- Insufficient time and resources are devoted to project scoping and cost estimation.

2. Recommendations

Recommendation 1. Establish system-level objectives for Seattle's transportation system to guide the overall scope and prioritization of CIP mobility projects.

- Communicate a consistent vision and plan for the overall function and role of the City's transportation system.
- Strengthen the measurement and communication of system-level transportation needs, funding requirements, and CIP outcomes.
- Develop CIP outcome metrics that are directly tied to system-level objectives.
- Link accomplishment of objectives to the current business planning initiative.

Recommendation 2. Establish the link between planning and mobility projects to ensure that system-level service objectives determine project-level prioritization and scoping.

- Expand the extent of subarea planning undertaken in the City and consider defining arterial level of development plans as part of these plans.

- Ensure that a clear connection exists between community outcomes and CIP outcomes through citizen involvement such as through citizen committees and citizen surveys.
- Establish a process for expanded participation in the prioritization of new transportation facilities – such as through the proposed Neighborhood Planning Policy resolution and/or citizen committees.

Recommendation 3. Improve procedures for project scoping and cost estimation.

- For mobility projects use results from implementation of recommendation 2 to guide scoping.
- Consider reassigning duties of existing staff and/or assigning additional staff resources to support this recommendation.

B. CIP Program Delivery and Project Management

Study Objectives	Study Summary
• Determine the major decision points in the life of a project (from glimmer to constructed) and who makes the decisions.	• Decision points differ depending on the type of project. Project life is depicted on pages 34 and 35 in the body of the report.
• Examine how resources devoted to development, design, and construction are balanced and how the department finds the resources to do "political" projects that come up outside the capital planning process.	• Resource leveling is currently performed through discussion between managers. This should improve when SeaTran's project management system has been implemented. SeaTran management shifts resources to accommodate politically prioritized projects, which impacts the budget and schedule of other CIP projects.
• Evaluate how CIP projects are substituted as the result of delays or loss of funding and how overall program accountability is maintained if substitutions are made.	• Project substitution takes place through a complex "rebalancing" process performed by SeaTran management. The process is not well communicated or reported. The study recommendations address improvements to reporting CIP changes.

1. Findings

- SeaTran needs to broaden/establish business objectives for CIP program management.
- It is too early to measure the success of the new approach to CIP delivery and management.

- SeaTran has yet to stabilize and fully implement the "cradle-to-grave" project management model.
- Change management (driven by funding uncertainty and other variables) complicates CIP delivery management and is not transparent or well communicated.

2. Recommendations

Recommendation 4. Broaden/establish SeaTran-wide business objectives for CIP program management and delivery.

- Manage against accomplishment of CIP outcomes by establishing business objectives such as projects delivered, volume of construction against categories of need, system condition, and reduction of backlog.
- Focus on outcomes and the multi-year nature of CIP delivery as opposed to inputs such as the "accomplishment rate" which is based on one-year cash expended against budget.
- Undertake cross-departmental teambuilding to ensure consistency of goals and objectives by improving coordination and understanding between SeaTran CIP program management, the Department's financial management, citywide financial management, SPU, and SPO.

Recommendation 5. Establish a transparent process for and improve communication of changes to the CIP.

- Establish procedures for reporting changes to the CIP to the Mayor's Office, City Council, SeaTran management, and staff depending on the type and magnitude of the change.
- Report changes made to the CIP, driven by funding uncertainty and other variables, such as earthquakes and landslides, regularly and clearly to project managers, City Council, and the Mayor's Office.
- Widen communication and participation in program-level "rebalancing" and resource leveling to improve transparency to project managers, City Council, and the Mayor's Office.

Recommendation 6. Strengthen project delivery management, organization, procedures, and accountability.

- Stabilize the Department's organizational structure and fully implement the "cradle-to-grave" project management approach.
- Conduct cross-functional teambuilding for project managers, financial analysts, right-of-way and environmental staff, and SPU resident engineers and drainage

designers involved with CIP delivery to ensure a common vision and accountability for outcomes.

- Start to measure/track outcomes and look for opportunities to strengthen project management.
- Continue efforts to strengthen accountability procedures for changes in scope, schedule, and budget.
- Update the project management manual and encourage project management training programs to ensure consistency of approach and expectations.

C. Program Monitoring and Reporting

Study Objectives	Study Summary
• Recommend key metrics for SeaTran to report on.	• Current reporting does not meet policymaker or management requirements. Metrics should address the outcomes and output from CIP investments. (Specific examples are provided).
• Determine the level and type of reporting that should be made to City Council and the Mayor's Office what changes in the CIP should trigger Council notification.	• SeaTran should report program delivery metrics. Procedures need to be established for reporting significant changes to CIP delivery plans to elected officials.

1. Findings

- The CIP is not linked to, or measured in terms of, policy and planning objectives.
- The CIP lacks program delivery metrics.
- The CIP lacks mechanisms for reporting changes.
- Changes to information systems are likely to improve SeaTran's capability to provide program- and project-level reporting.

2. Recommendations

Recommendation 7. Link CIP outcomes to policy and planning objectives identified during the CIP development.

- Measure and report on CIP outcomes in order to provide a mechanism for Departmental accountability.
- Metrics should show planned versus actual progress against CIP program goals and priorities, as well as indicate where the Department stands against the backlog of needs.

Recommendation 8. Develop, implement, and report on CIP program delivery metrics.

- Expand program delivery metrics to address program delivery outputs.
- Develop and implement procedures for providing reports on changes in the CIP to staff, City Council and the Mayor's Office, based on the nature and type of changes.

I. Introduction

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This report presents the results of a study of the Capital Improvement Program (CIP) of the City of Seattle Department of Transportation (SeaTran).

A. Study Purpose and Objectives

The purpose of this study was to examine the three fundamental elements of SeaTran's CIP delivery process:

- CIP development – including the planning for and prioritization of CIP projects.
- Program delivery and project management.
- Program monitoring and reporting.

The study diagnoses problems and provides recommendations for improving the CIP delivery process, including best management practices found in other local jurisdictions' transportation departments.

Key objectives for the study, by major CIP element, were:

1. CIP Development

- Determine how CIP projects are developed including planning, scope development, and cost estimation.
- Assess to what extent SeaTran should allow availability of restricted funding (grants, loans) to influence the projects undertaken.
- Evaluate how projects are prioritized and how SeaTran ensures that projects selected for implementation are cost-effective from a lifecycle perspective.

2. Program Delivery and Project Management

- Determine the major decision points in the life of a project (from glimmer to constructed) and who makes the decisions.
- Examine how resources devoted to development, design, and construction are balanced and how the department finds the resources to do "political" projects that come up outside the capital planning process.

- Evaluate how CIP projects are substituted as the result of delays or loss of funding and how overall program accountability is maintained if substitutions are made.

3. Program Monitoring and Reporting

- Recommend key metrics for SeaTran to report on.
- Determine the level and type of reporting that should be made to City Council and what changes in the CIP should trigger Council notification.

B. Methodology and Approach

To meet the objectives of this review, quantitative and qualitative analyses were completed through comprehensive interviews, data analysis, and a best management practices survey. A steering committee of City Budget Office, SeaTran, Strategic Planning Office, City Auditor, and City Council staff provided oversight and direction for the study.

1. Interviews and Focus Groups

In order to identify issues and assess undocumented program and project delivery processes, Dye Management Group, Inc. interviewed representatives from City Council, the Strategic Planning Office, and SeaTran senior and middle management. Focus groups with SeaTran project managers, designers, and financial analysts were also conducted.

2. Data Analysis

The City of Seattle's 2001 Adopted Transportation CIP, the Mayor's Transportation Blueprint, various neighborhood plans, 1999-2000 SeaTran quarterly reports, the City's comprehensive plan, the 2000 Transportation Strategic Plan, and other reports were analyzed. These documents provided background to the department and its planning and CIP reporting and monitoring processes.

3. Best Practices Survey

SeaTran staff, professionals active in public works leadership on a national level, and a review of available literature rating city performance suggested cities for a best practices survey. Some of those interviewed also suggested other cities to survey for specific information. The cities contacted were:

- Berkeley, California.
- Boulder, Colorado.

- Eugene, Oregon.
- Fort Collins, Colorado.
- Kansas City, Missouri.
- Long Beach, California.
- Olympia, Washington.
- Phoenix, Arizona.
- Portland, Oregon.
- Renton, Washington.
- St. Paul, Minnesota.
- San Jose, California.
- Sunnyvale, California.
- Snohomish County, Washington.
- Vancouver, Washington.

Best management practices found in other transportation departments are presented in the analysis under each CIP element and are also incorporated into study recommendations.

4. Steering Committee

Study oversight and direction was provided by a steering committee. The following City of Seattle employees participated on the steering committee:

- Jeff Davis, City Budget Office.
- Susan Cohen, City Auditor.
- Bill Alves, City Council Office.
- Eric Parsons, City Council Transportation Committee Staff.
- Susan Sanchez, Strategic Planning Office.
- Anne Fiske-Zuniga, SeaTran Director's Office.
- Steve Hartwig, SeaTran Capital Projects Director.
- Stu Nelson, SeaTran Capital Improvement Projects Division.
- Ed Switaj, SeaTran Capital Improvement Projects Division.

The committee provided input and validated the study at key points, including study inception and presentation of findings and recommendations.

5. Office of the City Auditor Interviews and Findings

Concurrent with this study, the Office of the City Auditor (OCA) was undertaking a citywide investigation of CIP processes and issues. At the request of the Steering Committee, OCA staff and consultants conducted one-to-one interviews with each of the staff members of the SeaTran Project Management, Project Control, and Transportation Design Section to discuss problems and issues faced in administering SeaTran's CIP program.

OCA staff were invited and attended most of the interviews and focus groups conducted as part of this study. Findings from the OCA interviews were considered and provided helpful perspective for this study.

C. Report Structure

The main body of this report is organized into the following sections:

II. Background on the Transportation CIP. This section provides a brief departmental overview of SeaTran, the role that the CIP serves, and the size, structure, and sources of funding for SeaTran's CIP.

III. CIP Development. This section outlines SeaTran's current practices, issues and findings regarding current practices, industry best practices, and recommendations for improving the CIP development process.

IV. CIP Program Delivery and Project Management. This section outlines SeaTran's current practices, issues and findings regarding current practices, industry best practices, and recommendations for improving CIP program delivery and project management.

V. CIP Monitoring and Reporting. This section outlines SeaTran's current practices, issues and findings regarding current practices, industry best practices, and recommendations for improving CIP monitoring and reporting.

Appendix A: Form of Government and Type of Funding Structure for Benchmark Cities Surveyed.

II. Background on the Transportation CIP

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This section provides a brief departmental overview of SeaTran, the role that the CIP serves, and the size, structure, and sources of funding for SeaTran's CIP.

A. Departmental Overview of SeaTran

SeaTran's stated mission is "to create and maintain for Seattle a safe and reliable transportation system which enhances neighborhoods, the environment, and the economy." The department builds, monitors, and maintains the City of Seattle's streets, bridges, retaining walls, seawalls, sidewalks, and bike paths. SeaTran also upgrades and maintains traffic control devices, including street signs and signals.

Over the last five years, Seattle's transportation function has seen significant departmental changes as the result of reorganization to public works functions in the City. The major changes affecting the transportation function are as follows:

- Before 1997, the Transportation Division of the Seattle Engineering Department (SED) performed the City's transportation function.
- In 1997, SED was divided into SeaTran and Seattle Public Utilities (SPU). At that time, SPU retained the engineering functions for transportation.
- In 1998, 53 SPU engineering, project management, and support staff assigned to transportation moved to SeaTran. SPU retained (and continues to retain) responsibility for drainage design and construction management and inspection.

In 1994, when the Transportation Fund was separated from the other SED funds, the State Auditor found that the other SED divisions effectively subsidized the transportation division to some extent. For this reason, the newly created fund was running a large cash deficit. However, rather than require the Transportation Fund to immediately develop a positive cash balance, the fund was given 14 years to eliminate its deficit. In 2001, the deficit is expected to be $5.2 million or less. In 2002, SeaTran's deficit target is about $4.7 million. The deficit should end in 2010.

B. Role of Capital Improvement Programs

A capital improvement program (CIP) is a systematic, organized approach to planning capital facilities that can involve and inform citizens and officials in a process that allocates funds through a careful evaluation of the need and timing of new facilities. CIPs present a plan for investing in capital facilities over a set period in the future by specifying identified improvement projects and their planned start and completion dates.

Successful programs have several characteristics:

- **They focus on community needs and capabilities.** Projects should reflect the community's needs, objectives and financial capability. The more closely aligned the CIP is with longer range plans, the more successfully community goals will be implemented.
- **Where the public participates in the planning of community facilities, and citizens are better informed about community needs and priorities.** Citizens who have participated in establishing the program are more likely to support the funding mechanism even if it results in increased taxes.
- **There is a mechanism for clear, concise reporting on the status of implementation of the CIP.** Annual reports that focus on the goals of the community and the projects that further those goals need to be brief and to the point.

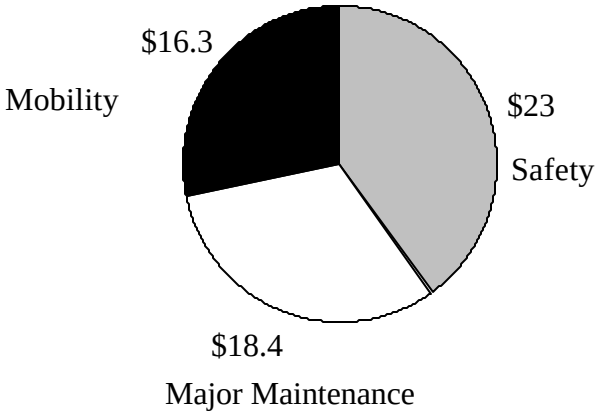
C. Size and Structure of SeaTran's CIP

SeaTran's CIP is the City of Seattle's 6-year plan for investing in transportation infrastructure. The CIP is divided into three programs, reflecting SeaTran's need to balance maintenance, system improvements, and development of new infrastructure.

- *Major Maintenance* projects invest in restoring facilities in order to avoid the cost of deferring maintenance. Examples of major maintenance projects from the 2001 Adopted CIP include resurfacing and grating the Ballard, University, and Freemont bridges; and repairing a damaged seawall supporting Alaskan Way.
- *Safety* projects are designed to improve vehicular, pedestrian, and bicycle safety. The 2001 Adopted CIP includes safety projects on South Spokane Street (to upgrade signals, improve lane markings, add crosswalks, and other improvements), and streetscaping at Denny Triangle.
- *Mobility* projects add infrastructure to improve the City's transportation flow. Examples from the 2001 Adopted CIP include extending the Burke-Gilman Trail and adding an Intelligent Transportation System (ITS) in Duwamish.

Exhibit II-1 illustrates the planned breakdown of projects by type for 2001.

Exhibit II-1: 2001 Adopted SeaTran CIP by Project Type (in millions)



Source: 2001 – 2006 Adopted SeaTran CIP

Exhibit II-2 shows a three-year history of the spending breakdown by CIP project type.

Exhibit II-2: Actual SeaTran CIP Spending 1998 – 2000 (in thousands)

	1998	1999	2000
Major Maintenance	$36,679*	$14,145	$16,136
Safety	$12,668	$10,479	$12,845
Mobility	$7,164	$5,879	$10,328
Total	$56,529	$30,503	$39,309

Source: SeaTran, SeaTran Quarterly Reports.

* Several large Major Maintenance programs in 1998 account for the relatively large expenditures for the year. These include $7.5 million in expenditures to repair storm (landslide) damage, $4.75 million for a bridge seismic upgrade on University Bridge, and $4.5 million to replace the Harbor Avenue Bridge. It was also an unusually big year for arterial resurfacing, on which the city spent $9.7 million in 1998.

SeaTran includes a number of project categories in its CIP that are called Annual Programs. These are primarily recurrent (non-project specific) programs that have set budgets with an annual inflation adjustment. Most Annual Programs fall within the categories of Major Maintenance or Safety. Instead of start and end dates, Annual Program projects are listed in the CIP as "ongoing." According to SeaTran staff, the Annual Program was moved into the CIP around 20 years ago in order to access funding where it was more readily available. Exhibit II-3 lists the Annual Programs from the 2001 Adopted CIP.

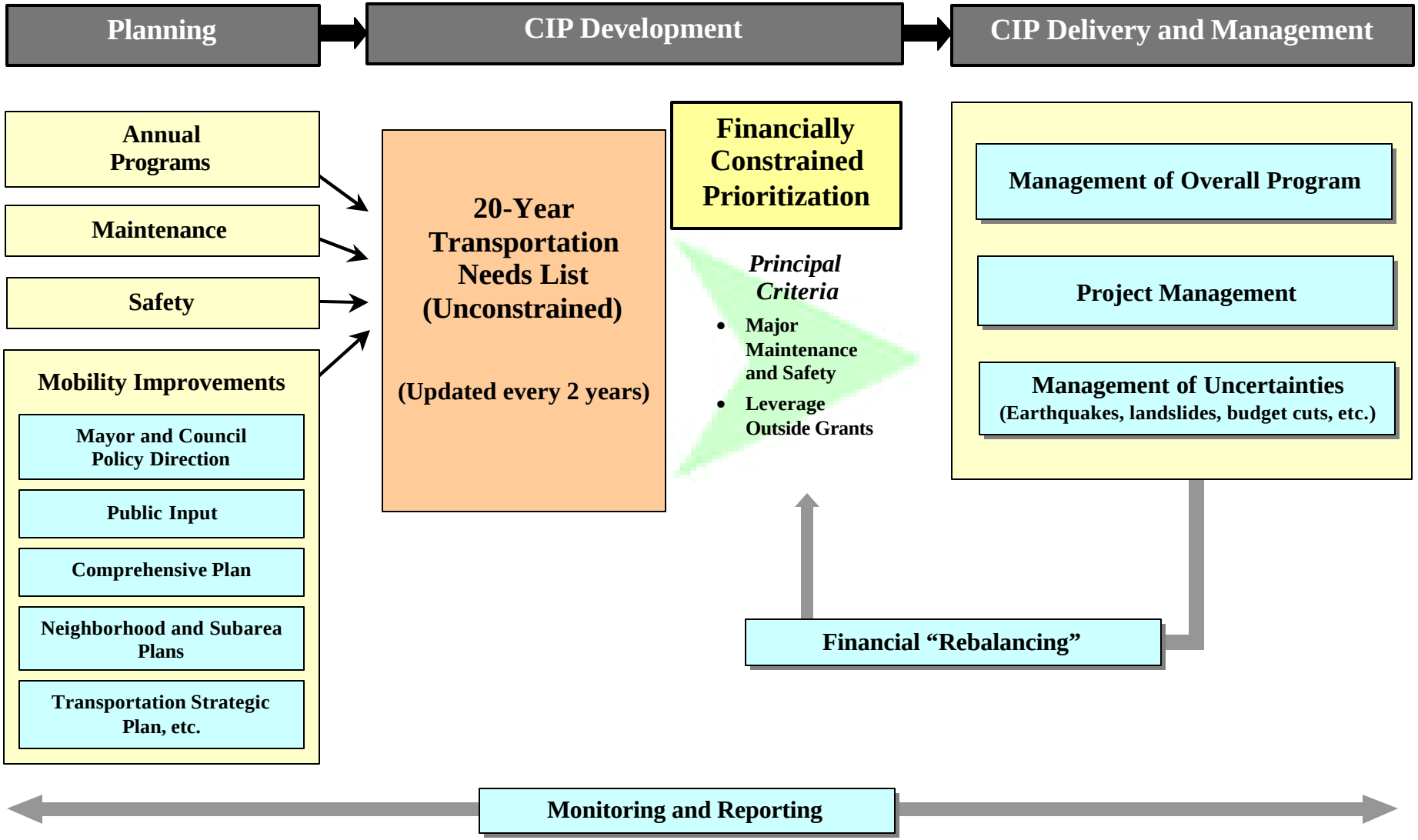
Exhibit II-3: Annual Programs from SeaTran 2001 Adopted CIP

Arterial Improvement Program (AIP) Reserves	Bike Spot Safety Improvements	Bridge Painting Program
Arterial Major Maintenance	Asphalt Walkway Maintenance	Bridge Seismic Phase II
Collision Evaluation Program	Crash Cushion Replacement Program	Crosswalk/Lane Mile Marker Replacement Program
Destination/Information Sign Replacement Program	Grant Match Reserve	Grant Match Reserve Opportunity Fund
Guardrail Rehabilitation Program	Hazard Mitigation Program-Areaways	Hazard Mitigation Program-SeaTran Risk Assessment
Left Turn Signals	Miscellaneous, Unforeseen and Emergencies	Mobility Choices Fund
Neighborhood Bike Improvements	Neighborhood Mid-Block Traffic Control	Neighborhood Pedestrian Improvements
Neighborhood Plan Implementation Program	Neighborhood Program (Development)	Neighborhood Traffic Control Program
Neighborhood Transportation Project Development	New Sidewalk Program	New Traffic Signals
Non-Arterial Asphalt Street Resurfacing	Non-Arterial Concrete Rehabilitation	Pedestrian Way Restoration, Pedestrian/Elderly
Handicapped Accessibility	Preferential On-street Parking Program	Regulator Sign Rehabilitation
Restabilization and Resealing Program	Retaining Wall Replacement Program	Sidewalk Repair
Sidewalk Repair Assistance Program	Signal Loop Detectors	Signal Maintenance
Sound Transit/Transit Coordination	Stairway Rehabilitation	Street Tree Replacement Program
Traffic Control Regulatory Devices	Traffic Control Spot Improvements (Signals)	Traffic Control Spot Improvements (Traffic Control)

Annual Programs represent approximately 25 percent of SeaTran's 2001 Adopted CIP. Expenditures within these categories were not evaluated in this study. Most of the programs support annual operation and maintenance activities.

Exhibit II-4 on the following page illustrates an overview of the overall CIP process, including planning, program delivery and project management, and monitoring and reporting. Each of these processes is described in detail in subsequent sections of this report.

Exhibit II-4: Overview of the CIP Process



D. Funding SeaTran's CIP

SeaTran funds its CIP through a combination of federal, state, and local funds. Each funding source requires a different process to obtain the funds and may impose certain restrictions on their use. The Department's Resource Management Division manages the complex budgeting and accounting for SeaTran's varied funding sources. The CIP lists 38 different funding sources; Exhibit II-5 below outlines the top ten sources of funding for the 2001 Adopted CIP.

Exhibit II-5: Top Funding Sources for the 2001 Adopted CIP

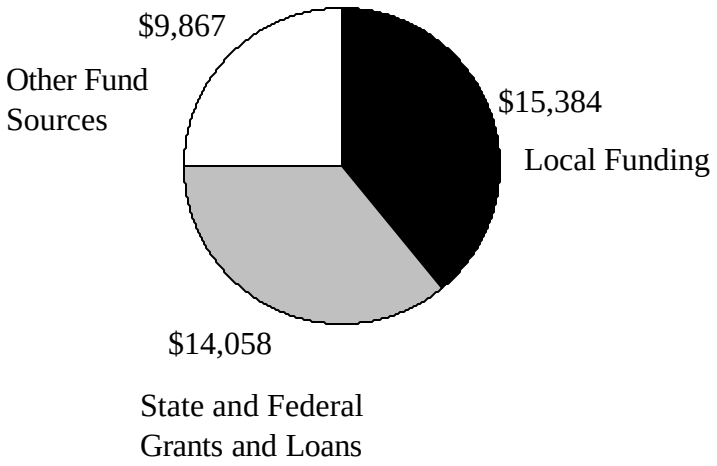
Fund	Source	2001 ($1,000)
TEA-21 Funds	Federal	$11,285
City Street Fund	Local*	$8,119
General Subfund	Local	$6,580
Public Works Trust Fund	Local**	$5,436
Limited Tax General Obligation Bonds	Local	$4,590
Cumulative Reserve Subfund	Local	$3,536
General Subfund – Reserved	Local	$3,402
Vehicle License Fees	Local	$2,556
Arterial Improvement Program	State	$2,087
Arterial City Street Fund	Local*	$1,942

Source: SeaTran 2001 Adopted CIP.
** City Street Fund and Arterial City Street Fund represent Seattle's share of state gas taxes.*
*** The Public Works Trust Fund is a low-cost state loan repaid with local funds.*

According to the Resource Management Division, going into a funding year between 1996 and 2000, 19-33 percent of the department's locally dedicated annual revenue was uncertain. This has improved considerably with the 2001/02 budget process where the dedicated General Fund allocation has become more stable. While many other states apportion transportation dollars to Cities by a preset formula, Washington primarily uses a grant-based approach. The two major state transportation agencies, the Transportation Investment Board (TIB) and the Washington State Department of Transportation (WSDOT) account for 60-70 percent of SeaTran's external funding. Local funding sources are crucial to the department since most grants require a local contribution (or "matching" funds) in order to obtain grant funding. Exhibit II-6 shows the breakdown of spending on the 2000 CIP by local, state and federal, and other funding sources.

Other funding sources include funds from private partnerships (like the Burlington Northern Railroad) or other city departments (like Seattle Public Utilities for drainage and City Light for street lighting).

Exhibit II-6: 2000 CIP Actual Expenditures by Funding Source (in thousands)



Source: SeaTran Quarterly Report

The Resource Management Division has devised a plan that attempts to deploy SeaTran's financial resources in such a way that the most unrestricted money is available to move between projects when necessary. The plan also tries to fund projects with several different funding sources (or "colors of money") because adding funding sources to a project requires City Council action.

While heavy reliance on grant funding has proved a challenge for SeaTran, other factors have impacted the city's ability to fund transportation by cutting off or disrupting major revenue streams. In 1995, the State Supreme Court declared that the use of a street utility fee was unconstitutional. The street utility fee revenue had been used to fund traffic control devices, sidewalks, curbs, gutters, parking, roadway drainage facilities, and seismic retrofit of the City's priority bridges. In 1999, state voters passed Initiative I-695, which abolished an indirect source of revenue, the Motor Vehicle Excise Tax (MVET), and also caused the City to hold the spending of Vehicle License Fee funds in 2000, until its status could be legally clarified. In the past two years, the department has received larger general fund contributions partially to compensate for the loss of the street utility fee and the MVET sources of revenue.

Varied sources of funding and their accompanying rules and restrictions add to the complexity of the financial management environment in which SeaTran operates. This

complexity is a continuing factor in program delivery and project management as resources are often reshuffled to meet time and grant compliance constraints. Within the course of a CIP year, frequent programmatic shifting of financial resources and, consequently, staff resources devoted to project development, are required.

III. CIP Development

■

CIP development refers to the planning and needs analysis that generates a list of potential improvement projects that are prioritized and then selected for inclusion in the City's CIP. This section provides a summary of SeaTran's current practices for CIP development (including planning and prioritization), findings regarding these practices, best management practices from other jurisdictions, and recommendations for improvement.

The following best management criteria for CIP development were used for evaluating SeaTran's current CIP development practices:

- The planning process should guide the CIP prioritization process by providing strategic system-level direction for investment in transportation capital.
- CIP strategic objectives and program priorities should be policy driven, clearly communicated, and measurable.
- The project prioritization process should be transparent, replicable, and driven by the CIP strategic policy objectives and program priorities.
- Planning and CIP development should address transportation outcomes.

Study objectives addressed in this section are:

- Determine how CIP projects are developed including planning, scope development, and cost estimation.
- Evaluate how projects are prioritized and how SeaTran ensures that projects selected for implementation are cost-effective from a lifecycle perspective.
- Assess to what extent SeaTran should allow availability of restricted funding (grants, loans) to influence the projects undertaken.

A. Current Practices

CIP development involves both planning and prioritizing projects.

1. Planning for the CIP

Planning is the first step in SeaTran's CIP process. Planning the CIP involves methodically identifying potential improvement projects and developing reasonable schedules and budgets for the projects.

Planning for major maintenance and safety projects is somewhat different from planning for mobility projects. At the outset of every year, SeaTran establishes a level of spending for major maintenance and safety projects. This figure is an estimate set by "T-staff" (a group of senior SeaTran management and finance staff) based on the department's "target level of investment" (formerly "professional judgement") of needed funding and on historical levels of funding set by the City Budget Office and approved by City Council.

a. Ensuring projects are cost-effective from a lifecycle perspective

The first step toward inclusion of a major maintenance or safety project in SeaTran's CIP is being identified on the department's bigger, unfunded needs lists. Three separate 20-year needs lists are established for structures, signs and signals, and roads. The directors of the Roadway Structures, Neighborhood Transportation Services and Street Use, Street Maintenance, and Traffic Management Sections, and the Director of the Capital Projects Division[1] develop the 20-year needs lists.

Each director has separate, technically driven procedures for identifying priority needs. For example, the Roadway Structures Section rates projects on a 100-point index: 70-100 is a high priority project with major defects that require major rehabilitation or replacement; 30-69 points indicates a medium priority project with moderate to significant defects that require significant rehabilitation; 0-29 points indicates a low-priority project that requires minimal to significant rehabilitation potential. Exhibit III-1 shows the rating criteria behind Roadway Structures' index.

Exhibit III-1: Project Rating Criteria for Roadway Structures

	Maximum possible points
Preserve public investment in City's bridges, seawalls, retaining walls, and stairways	30
Ensure public safety – reduce exposure to safety risks	30
Economic benefits	30
Other – favorable impacts on the system, facility itself, or on the public use	10
Total:	100

Source: SeaTran

[1] Responsibility for the Pavement Management System, a computerized system that identifies pavement needs, has recently been moved from the Director of Street Maintenance to the Director of Capital Projects.

Other systems are in place for identifying major maintenance or safety needs. A pavement management system analyzes the City's pavements based on pavement deterioration curves. This system identifies pavement maintenance projects which, if undertaken, will minimize the lifecycle cost of maintaining the facility. The problem in reality is that, due to limited budgets for transportation improvements, it is not always possible to undertake the pavement treatment at the most optimal time from a lifecycle perspective. For safety projects, analysis of traffic and accident data, along with professional knowledge of site conditions, is used to determine which projects, for example signal coordination projects, will provide the greatest benefit.

SeaTran does not establish a 20-year needs list identification for mobility projects. Projects may be generated from a number of sources, including the Department of Neighborhoods, the Washington State Department of Transportation, the Mayor's Office, City Council, and other agencies. Mobility projects are identified as an unconstrained list by SeaTran program directors. These projects are then screened by T-staff. The policy screen narrows the wish list projects to a list of viable, fundable, unprioritized projects.

b. Scope development and cost estimation

Scope development and cost estimation takes place during the grant application writing stage in project development. A general project scope and cost is required as part of the grant application submission. Although SeaTran used to have two staff designers dedicated to preliminary project scoping and cost estimation, one has retired and the other has moved to another function. Now two designers from the Transportation Design Section are enlisted to provide preliminary scoping and cost estimates. This is performed on an ad hoc basis as a part of the designers' other duties.

The nature of the grant writing process encourages vague scopes and rough orders of magnitude cost estimates since this level of rigor is all that is required for an application. This affords SeaTran flexibility to change scope and combine projects once grants are approved, but tends to result in future budgets and schedules being continually revised as more detailed design is undertaken.

2. Prioritization of CIP Projects

Once projects are identified, prioritized, and selected for inclusion in the financially constrained CIP, they need to be ordered year by year. Project schedules and budget needs are then coordinated so that a fundable program is planned for each CIP year.

As with planning, prioritization for major maintenance and safety projects is slightly different from that of mobility projects. Technically driven CIP projects are already

prioritized by the technical system that identified their need. The Annual Program is simply added to SeaTran's proposed CIP.

The need to attract outside funding complicates the prioritization process for other major maintenance and safety projects. Once structures, signs and signals, and pavement have generated lists of technically identified 20-year major maintenance and safety needs, SeaTran's Project Planning and Development Section performs an assessment of how competitive those projects may be for grant funding. Projects may be combined or scope added to projects in order to increase their competitiveness. Project Planning and Development, with the support of two designers from the Transportation Design Section, prepares preliminary engineering (including scope and cost estimates) for grant applications. Those projects that successfully secure grant funding are assigned a schedule and budget and are added to the CIP.

Mobility projects lack the prioritization inherent in the technically scored major maintenance and safety project process. Instead, after projects pass through a multi-agency policy screen, there is a "planning gap," where several plans are taken into account, but no clear system for integrating the plans to guide prioritization is in place. Although SeaTran takes into account the Mayor's Transportation Blueprint, the Transportation Strategic Plan, the Citywide comprehensive plan, and neighborhood plans,[2] it is not transparent how these plans affect the ultimate prioritization of mobility projects.

When mobility projects are prioritized, the same process takes place as for grant-funded (non-Annual Program) major maintenance and safety projects. Projects are assessed for funding competitiveness, grant applications are prepared with preliminary scopes and budgets, and funded projects become part of the CIP.

In 1996, SeaTran prepared the priority-setting document shown in Exhibit III-2.

[2] A further gap arguably exists because not all neighborhoods are represented by a neighborhood plan.

Exhibit III-2: SeaTran Priority Levels

	Is the activity:
Priority 1	Legally mandated with serious consequences for failing to meet the mandate, such as debt service? One without which the Department cannot function? One without which a significant public safety problem will be created? Currently in construction? An operations or preventative maintenance service that must be done for the transportation system to function on a daily basis?
Priority 2	Directly related to the Department's mission statement and affects a large number of customers? Funded by user fees or charges and supports the mission statement? One that will save the City a significant amount of money in the future either by allowing for cost-effective major maintenance investments in the infrastructure we have and/or allowing the city to leverage its local major maintenance funding through grants or partnership funding assistance? One that will significantly enhance safety and mobility for people, goods, and services? Supporting progress towards implementing multiple City goals or policies as called out in the Strategic Capital Plan, the Comprehensive Plan, the Transportation Strategic Plan or a high priority in several neighborhood plans?
Priority 3	Directly related to the mission statement, but does not affect a large number of customers? Meeting a high level of public demand? Supporting progress towards implementing a City goal or policy? One that will save the City a significant amount of money now or in the future by allowing the City to leverage its local funding through grants or partnership funding or debt financing assistance? Is this funding that may be available now or in the coming year that would not otherwise be available so that some level of infrastructure and mobility improvements to the system can be funded, thus allowing the City to leverage its funds and accomplish mobility and economic development improvements. One that will enhance safety and mobility for people, goods, and services?
Priority 4	Only indirectly related to the Department's mission? Only indirectly supporting accomplishment of City goals and policies? Only indirectly contributing to significant future cost savings? Responding to a lower level of public demand?

As shown in the exhibit, higher priority is given to emergency or legally required projects and those projects already begun. Strong public support and adherence to the department's mission are also critical factors in determining the priority of projects. While SeaTran considers the factors presented in Exhibit III-2, the department has not incorporated them into a formal prioritization process.

B. Issues and Findings

1. Departmental program goals and priorities across different categories of need are clear and policy driven.

The 2001-2006 CIP is an improvement over its predecessor because it provides a clearer picture of program goals and priorities. Maintaining infrastructure, addressing system safety, and leveraging outside funds are clear Departmental program priorities that are reflected in the CIP. There is direct policy direction governing the broad allocation of resources and the prioritization between safety, maintenance, mobility and other needs. SeaTran also operates under policy direction to maximize grant funding.

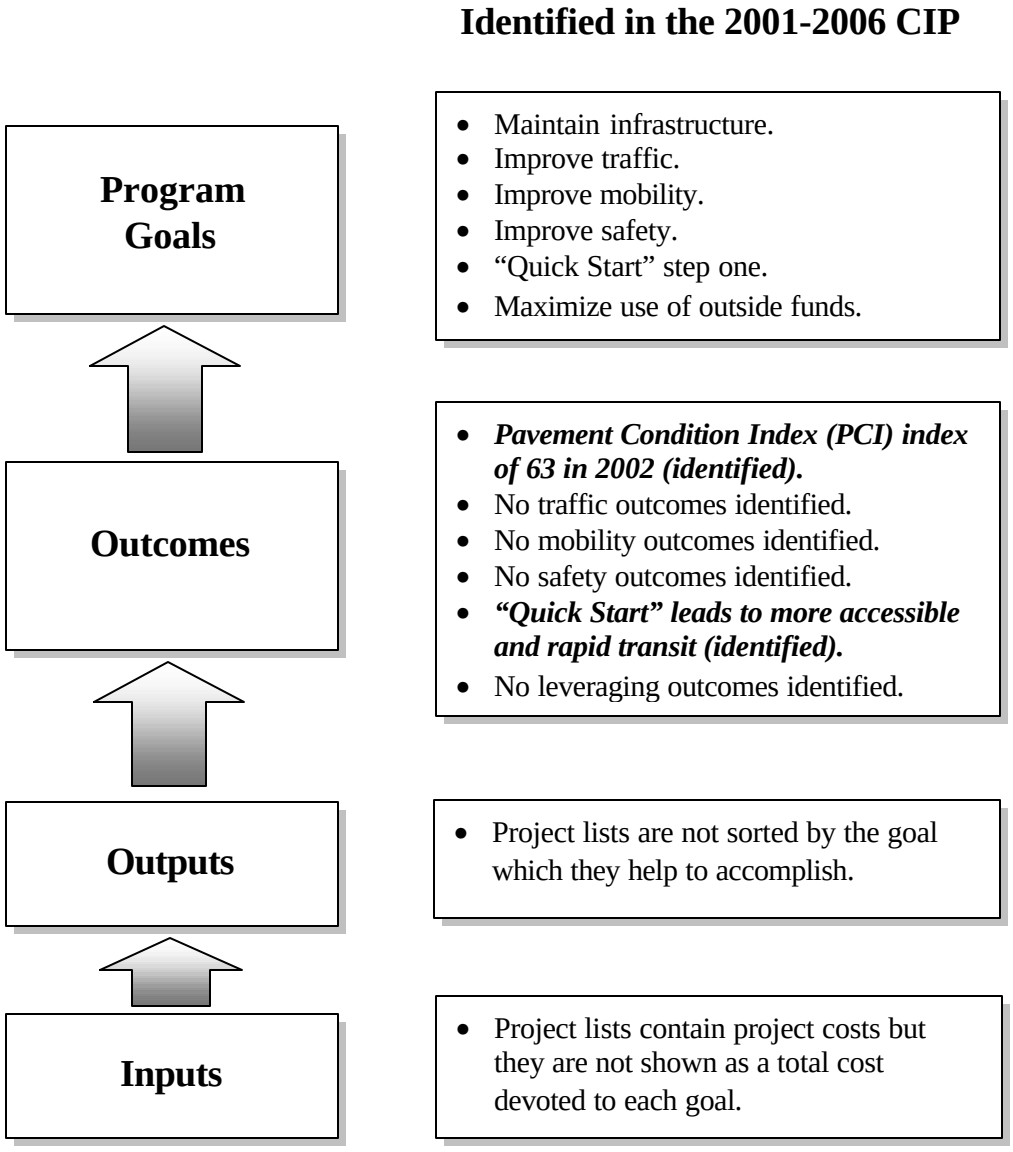
2. Overall CIP needs, funding requirements, and outcomes are not explicitly measured and communicated in the CIP.

The CIP and other Departmental documents do not communicate overall Citywide major maintenance, safety, and mobility needs for the transportation system particularly well. Formally expressing the transportation system needs faced by the City would help communicate the challenge faced by the Department.

The current CIP provides some analysis of funding by type of project, but does not relate funding levels to city transportation goals. The CIP text is devoted mainly to the discussion of inputs (money) with the remainder devoted to many pages of project listings. Although the CIP lays out how SeaTran sets priorities, it is not clear how much weight or level of importance is given to the different factors.

An important element missing in the current CIP is the identification and discussion of outcomes. Our best practice conclusion is that program goals should be describable in terms of desired outcomes. Exhibit III-3 indicates these relationships and the current status of the CIP.

Exhibit III-3: Findings Regarding the Relationship between CIP Outputs and Inputs



3. The project prioritization process for mobility projects is not transparent. A gap exists between the planning process and the CIP prioritization process for mobility projects.

There is no shortage of planning undertaken within the City; however, much of the planning is policy related and does not provide adequate system-level direction for prioritization of specific projects. The City's Transportation Strategic Plan (TSP), 37

neighborhood plans, the Mayor's Transportation Blueprint, and the City's comprehensive plan provide policy guidance and broad vision, but they lack the specificity to guide project prioritization and scoping. On the other hand, the neighborhood planning process generates large "wish lists" of projects, but there is lack of clear process for determining priorities within plans and between plans.

Although SeaTran takes into account the Mayor's Transportation Blueprint, the Transportation Strategic Plan, the Citywide comprehensive plan, and neighborhood plans, there is no mechanism to reconcile them and to prioritize mobility projects. This situation results in what we have referred to as a "planning gap." From the perspective of this study, the most significant aspect of the gap is the absence of a Citywide arterial or overall mobility plan. This would then guide the prioritization and scoping of projects so that individual projects support the accomplishment of system-level objectives.

City Council and the Mayor's Office influence priority for large mobility projects to a great extent. For example, "The Ave" in the University District was funded as a mobility project. Subarea plans are few and not part of an overall approach. The problem caused by this is that the planning provides limited basis from which to establish the parameters for a project such as "The Ave" improvements and its overall contribution towards city mobility goals compared to other potential projects.

Citizen committees have been used effectively in other jurisdictions to guide project prioritization and ensure that the projects selected are in line with the overall system goals for the city. The City of Bellevue and the City of Phoenix provide good examples of effective citizen committees. With transportation commissions or citizen committees, projects in the CIP program are developed and prioritized by city staff and then extensively reviewed, adjusted, and approved by the citizen committees. This can lead to a well-funded capital program with wide community understanding and acceptance.

4. The project prioritization process has clear, well-founded technical procedures for major maintenance and safety projects.

Major maintenance and safety needs have clear, technically driven methodologies for prioritization, although some field observation and discretion does enter into the prioritization process. The technically driven process behind major maintenance and safety needs identification helps to ensure that projects that are undertaken are cost effective from a lifecycle cost perspective. Grant availability does affect which projects are funded. This means that projects may be funded out of the order of technical need and/or combined with other projects in some cases. This is a result of the nature of SeaTran's dependence on outside funding and is consistent with the policy direction to maximize the use of outside funding sources.

5. Insufficient time and resources are devoted to project scoping and cost estimation.

The Department does not devote sufficient time and resources to preliminary project scoping and cost estimation. This is a function of the fact that the grant writing process does not require a rigorous approach to scoping and cost estimation for receiving project funding. However, once funding is obtained, SeaTran project managers inherit projects with vague scopes and budgets. This can result in continual scope and cost changes throughout delivery and complicates financial management and program resourcing. This impacts the ability of SeaTran to effectively manage individual project's scope, schedule, and budget once a project is included in the CIP.

C. CIP Development Best Practices

The best practices survey identified the following best management practices for CIP development.

1. Best Practice: There is a clear connection between desired community outcomes such as safe streets or mobility options and CIP outcomes.

The purpose of any capital plan is to implement the vision that a city has of its future. A connection should exist between the city's vision and the projects in its plan. If the city's vision has been stated as a series of community outcomes, it becomes possible to track how well the capital plan is working in turning community vision into reality.

For example, the Boulder, Colorado City Council has set goals for changing mode share, limiting congestion, improving mobility and lessening air pollution. The city's capital plan is evaluated against those goals and funding levels are determined that will optimize results in each goal area. Elected officials and citizens can see the relationship between funding levels in the capital plan and meeting goals in each area. The staff prepares a report that projects the effect of the capital plan on each goal. For example, the mode share for bicycles is predicted to rise from eight percent to 12 percent, 13 percent or 15 percent for three different proposed funding levels. Similar projections are made for pedestrians and single occupant vehicles so that policy impacts of relative funding levels can be weighed.

SeaTran's CIP lacks a clear connection with community outcomes. Creating a connection between CIP outcomes and community outcomes requires that the Department begin developing and using outcome metrics, which are discussed later in this study.

2. Best Practice: There is a strong working relationship between the staff and representative citizen committees. There is a shared responsibility in the development of the CIP.

Citizens are the customers of a city's transportation program. If city transportation staff lack a clear understanding of what customers really need, they may fund improvements that are little used or whose purpose is misunderstood. A dialogue between the customer and technical staff can help realize a more effective transportation program. The key characteristic of a successful program is a high trust level between citizens and staff. The staff can build trust by establishing a record of listening and then doing what they said they would do.

City transportation staff in Phoenix, Arizona work closely with a Citizens Bond Committee to develop a list of proposed projects for bond election approval. The citizen committees are responsible for making a recommendation to the voters for the next bond election. Projects in the program are developed and prioritized by City staff and then extensively reviewed and scheduled for bond elections by the citizen committees. Only one bond election has failed in the last 10 years, leading to a well funded capital program with wide community understanding and acceptance.

In St. Paul, Minnesota, 17 District Councils discuss the project priority lists developed by staff and recommend project lists to the City Council. The District Councils hold public hearings on the priority lists before making a recommendation to the City Council, where another public hearing is held. A committee consisting of representatives meets to review the relative merits of projects submitted by the separate districts. This way the separate districts resolve competing interests among themselves without developing an adversarial relationship with City staff.

The composition and focus of citizen committees varies depending on the needs and concerns of the community. While the Phoenix committee focuses on keeping up with the city's growth through capital projects, St. Paul's committee is more concerned with operating and maintaining a mature transportation system. A number of citizens committees also address regional issues.

SeaTran, with its consideration of neighborhood planning, has made progress in involving citizens in the CIP. However, SeaTran lacks a formal process for integrating citizen input into CIP development and prioritization.

3. Best Practice: Local conditions, vision, and values drive priorities. Priorities are reflected in a clear statement.

Cities have many similar needs, but local conditions dictate what is most and least important when considering where to spend capital dollars. The use of complex formulas to rate projects has the purpose of fairness and objectivity but also can be a "black box," or a functioning system whose internal workings are apparent only to

technical staff. Therefore, it is important not only to reflect community values in the priority rating system, but also to make it simple enough to be understood by almost all.

Phoenix has a simple 10-point rating system that fits on one page. It is used by the staff and citizens committee to rank a variety of projects that meet a variety of goals. The points covered are:

- System continuity
- Service to land use
- Drainage
- Freeway connectivity
- CIP Coordination
- Congestion relief
- Air quality improvements
- Modal improvements
- Safety improvements
- Pavement Condition

This system helps Phoenix to prioritize citywide projects that meet a variety of goals to make them attractive to the greatest number of people.

Not all cities rely on local funding as heavily as Phoenix does. As is the case with Seattle, finding private partners and leveraging local dollars against state and federal grant programs can be the only way for some cities to make progress toward reducing huge transportation backlogs. San Jose, for example, has a stated goal of leveraging local dollars with grants and sets a local funding percent of program cost as a target.

SeaTran has articulated its program goals in a clear statement. However, funding availability and grant constraints often influence project-level decisions and prioritization.

D. Recommendations

The following recommendations are made to improve SeaTran's CIP development.

Recommendation 1. Establish system-level objectives for Seattle's transportation system to guide the overall scope and prioritization of CIP mobility projects.

- Communicate a consistent vision and plan for the overall function and role of the City's transportation system.
- Strengthen the measurement and communication of system-level transportation needs, funding requirements, and CIP outcomes.
- Develop CIP outcome metrics that are directly tied to system-level objectives.
- Link accomplishment of objectives to the City's current managing for results business planning initiative.

It is important that SeaTran communicates its vision and plan for the overall function and role of the City's transportation system, as expressed by measurable outcomes, through the

CIP document and other documents that describe SeaTran's function and objectives. This vision should be communicated within SeaTran through the CIP development process, to the City Council and the Mayor's Office through the CIP document and as part of long-range planning. As part of long-range planning, SeaTran should establish and communicate system-level transportation needs and funding requirements. While SeaTran has presented funding requirements in its "target level of investment" report, the report was at the macro level and did not fully describe the outcomes of falling short of the target levels for SeaTran's different functions.

Since only a few outcomes have been described in SeaTran's CIP, it is difficult to identify which projects contribute to those outcomes and how to measure whether that contribution was realized later. Outcomes can be described as targets, benchmarks, or change statements. Exhibit III-4 illustrates an array of the type of outcome descriptions that could be considered for each Departmental goal. The actual outcomes used by SeaTran should be the result of a cooperative effort by all those who have a stake in the accomplishment of the goals.

Exhibit III-4: Potential Outcome Descriptions for Existing SeaTran Goals

Current SeaTran Goal	Potential Outcome Description
Maintain Infrastructure	• The pavement condition index rating will improve from 58 in 2000 to 63 in 2002. (Although this is an existing outcome description, it appears to measure only arterial streets. Outcomes for other streets could be addressed.) • A majority of citizens will rate street conditions as good or better. (As measured through a citizen survey.) • Sidewalk repairs will be limited to an amount that can be accomplished in an agreed upon time period. • A target date will be met for earthquake retrofitting of all structures. • Bridge painting will meet agreed upon standards.
Improve Traffic	• A majority of citizens will rate traffic as good or better. (As measured through a citizen survey.) • Delays encountered at key intersections will be reduced to an agreed upon desirable minimum time. • Travel times in specific corridors will meet an agreed upon average speed or total travel time.
Improve Mobility	• The number of daily person trips using all modes of travel will reach agreed upon levels. (If the desire is to increase the total number of trips, but shift those trips to transit or bicycles or walking trips, desirable outcomes can be stated as percent decreases or increases in each mode. Another way of stating this would be to identify a specific goal of modal splits by type.)
Improve Safety	• Crashes (or the crash rate) will be reduced each year. (Specific types such as fatalities could have more aggressive desirable outcomes approaching zero.) • The costs due to accidents will be reduced to an agreed upon level.
Quick Start Step One	• The speed of and access to transit will be improved by agreed upon target.
Maximize Use of Outside Funds	• Historical levels of outside funding will be maintained or increased by a percentage based on a reasonable analysis. (There may also be a desire to have a different outside funding goal for each goal area in the CIP.) • The entire CIP will be accomplished using the least amount of local funds.

All of the outcomes described above can be stated as either the goal for the next two years of the CIP, the whole life of the CIP, or some longer period. Outcomes will have to be

measured later, so even a 20-year goal will have to have a two-year target with which to compare at the end of the current budget cycle.

While the establishment of measurable system-level objectives does not provide a "formula" for determining how much of available transportation funding should be channeled toward maintaining infrastructure, improving traffic, improving mobility, or improving safety, it does provide a tool for expressly demonstrating what the City will get for investment in each area. The City's capital plan can be evaluated against those goals and funding levels can be set that will optimize results in each goal area. Elected officials and citizens will be able to see the relationship between funding levels in the capital plan and meeting goals in each area because staff can prepare a report that projects the effect of the capital plan on each goal. For example, the maintenance backlog may be reduced by 10, 15, or 20 percent over five years for three different funding levels proposed. Similar projections are made for other goals areas so that policy impacts of relative funding levels can be weighed.

Recommendation 2. Establish the link between planning and mobility projects to ensure that system-level service objectives determine project-level prioritization and scoping.

- Expand the extent of subarea planning undertaken in the City and consider defining arterial level of development plans as part of these plans.
- Ensure that a clear connection exists between community outcomes and CIP outcomes through citizen involvement such as through citizen committees and citizen surveys.
- Establish a process for expanded participation in the prioritization of new transportation facilities – such as through the proposed Neighborhood Planning Policy resolution and/or citizen committees.

The City should focus on developing arterial level of development plans as part of subarea plans to enable neighborhoods and the City to define plan objectives for minor and major arterials that specify functional role and mobility objectives. These plans would define the planned width and type of roadway and provide guidance for project design decisions affecting cross-section, signalization, design issues such as wider sidewalks, transit bus stop pullouts, transit vehicle priorities, etc. This will provide a mechanism to establish policy objectives for different roadways and clearer direction for SeaTran. It would guide project scoping and ensure continuity so that incremental project investments support system-level goals.

It is important that SeaTran ensure that a clear connection exists between community outcomes and CIP outcomes through citizen involvement. Many cities undertake citizen surveys to quantify this issue. For example, in Portland an annual citizen survey rates street maintenance quality, street lighting quality, street smoothness, street cleanliness, congestion, safety, and air quality.

Expanded participation in the project prioritization process, such as through the proposed Neighborhood Planning Policy resolution and/or citizen committees, will help to ensure that the project prioritization process is not a "black box." This will increase trust between the Department and all stakeholders (City Council, the Mayor's Office, and citizens) and provide a mechanism to ensure that projects selected meet the City's system-level objectives.

Recommendation 3. Improve procedures for project scoping and cost estimation.

- For mobility projects use results from implementation of recommendation 2 to guide scoping.
- Consider reassigning duties of existing staff and/or assigning additional staff resources to support this recommendation.

A consistent approach to scoping and staffing projects, along with standards for cost estimating at the various phases in the life of a project, can reduce project delays. In the case of mobility projects, an intent of the prior recommendation is to provide planning-level objectives for the arterial system. These objectives would be addressed in scoping. For example, the objectives would describe design features such as bus turnouts, signalization, etc. that a project should incorporate to meet system-level objectives.

It is usually wiser to invest time during the early stages of project development to consider issues such as levels of quality and permitting requirements that could add new features during the course of the project. The Department should consider reassigning duties of existing staff and/or assigning additional staff resources to project scoping and cost estimation. Even though more detailed preliminary project scopes and cost estimates may not be required for grant applications, additional effort invested by the Department in this area will yield tangible benefits in terms of adherence to scope, schedule, and budget throughout project delivery.

IV. CIP Program Delivery and Project Management

■

CIP program delivery refers to the process through which projects specified in the CIP are designed and constructed. This section provides a summary of SeaTran's current practices for CIP program delivery and project management, findings regarding those practices, best management practices from other jurisdictions, and recommendations for improvement.

The following best management criteria for CIP program delivery and project management were used for evaluating SeaTran's current CIP development practices:

- SeaTran should deliver what the CIP says it will deliver when it says it will.
- An effective and accountable organization for project management should be in place.
- The Department should have effective scheduling and tracking tools for managing individual projects as well as resource leveling and tracking for the multiple projects in the overall program.
- Controls, accountabilities, and reporting mechanisms should be in place for changes in project scope, schedule and cost.
- Change and uncertainty should be well managed and communicated.

Study objectives addressed in this section are:

- Determine the major decision points in the life of a project (from glimmer to constructed) and who makes the decisions.
- Examine how resources devoted to development, design, and construction are balanced and how the Department finds the resources to do "political" projects that come up outside the capital planning process.
- Evaluate how CIP projects are substituted as the result of delays or loss of funding and how overall program accountability is maintained if substitutions are made.

A. Current Practices

In this section the following distinctions are made:

Program delivery. Program delivery refers to the management of a program that includes multiple projects. For example, management of the entire CIP delivery is program management, or managing all pedestrian projects is program management.

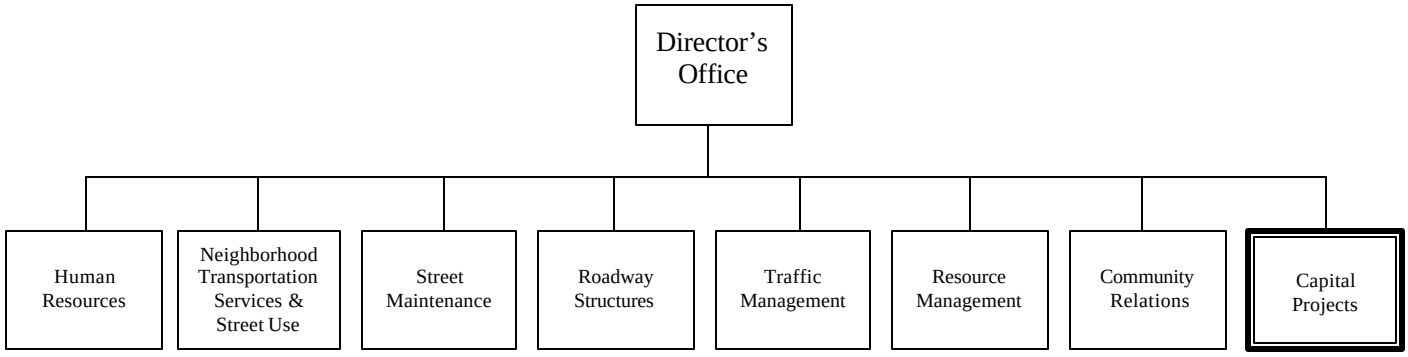
Project management. Project management refers to the responsibilities for delivering a single project within the CIP. Project managers could have responsibilities for managing multiple projects.

Functional management. Functional management refers to management responsibilities for specific functions within project delivery. For example, right-of-way acquisition, design, and construction inspection are all functions within project delivery.

1. Program Delivery

SeaTran has a Capital Projects Division responsible for managing the CIP process. Exhibit IV-1 shows a high-level view of how the division fits into SeaTran's organization.

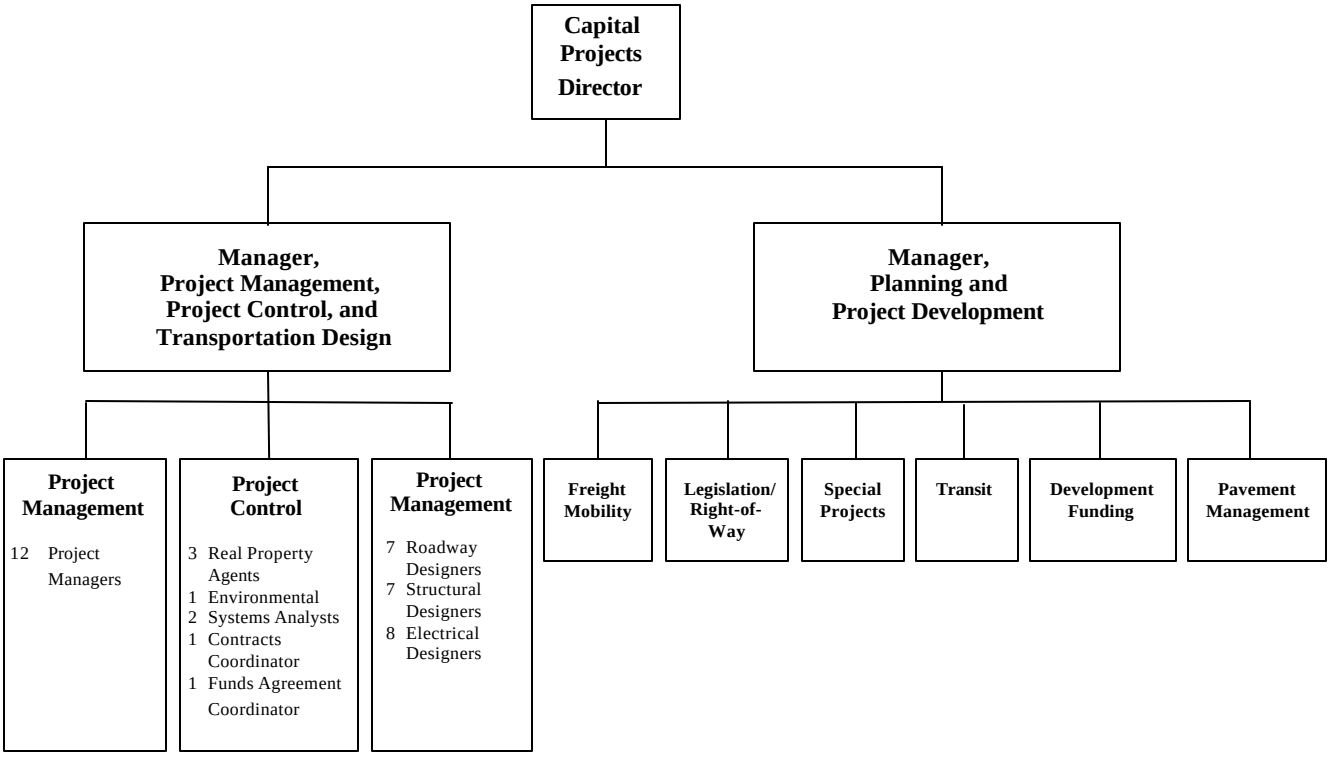
Exhibit IV-1: SeaTran Organization Chart



While the Capital Projects Division has organizational responsibility for the CIP, it relies heavily on other SeaTran divisions. Street Maintenance, Roadway Structures, and Traffic Management play a key role in developing projects for the CIP. Resource Management provides financial analysis and grant compliance help during the project management stage. CIP delivery is a fundamental SeaTran-wide business objective.

Exhibit IV-2 illustrates the organization of the Capital Projects Division.

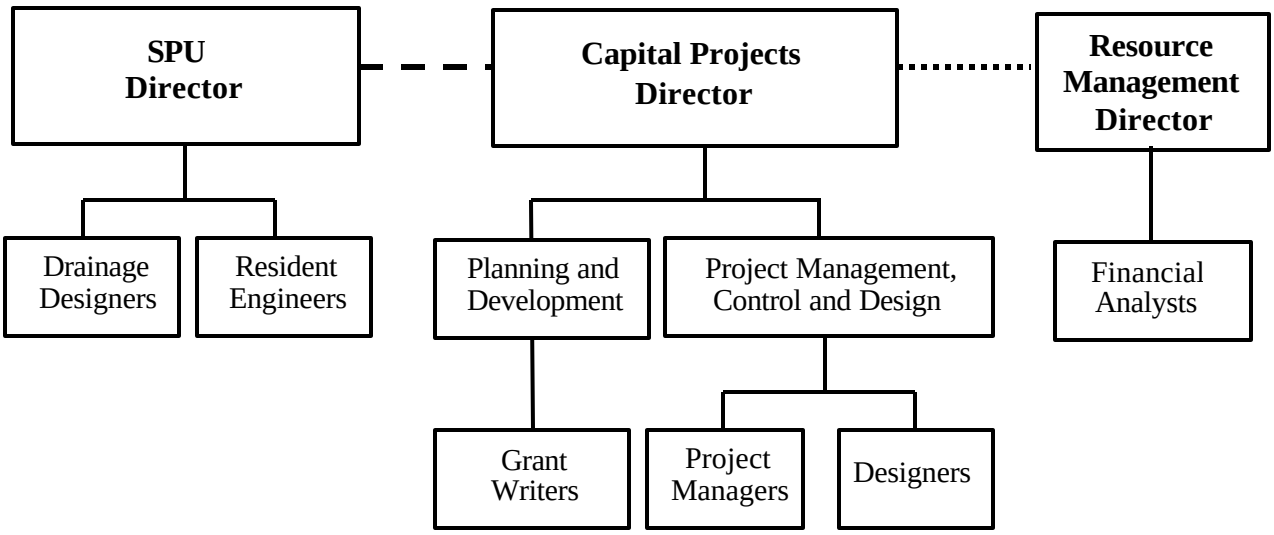
Exhibit IV-2: SeaTran Capital Projects Division



Delivering the CIP involves coordination between SeaTran's Capital Projects and Resource Management Divisions and between SeaTran and Seattle Public Utilities (SPU).

Exhibit IV-3 shows the different City participants involved in delivering the CIP.

Exhibit IV-3: SeaTran Organization for Program Delivery



SeaTran relies on SPU for drainage designs. SPU resident engineers also manage construction after a contract has been awarded.[3] Although SPU and SeaTran have a memorandum of understanding to promote consistent accountability from "cradle to grave" on project management, SeaTran and SPU also have different missions: SeaTran's main goal is efficient movement of people and traffic; SPU's goal is to provide water, sewer, drainage, and solid waste service to the City while enhancing the environment. Conflicting missions and different leadership among key team members complicated program delivery and increases the importance of effective communication and coordination.

a. Resource balancing

Currently approximately 80 to 90 projects are in the design stage at SeaTran on an annual basis, while annually approximately 50 to 60 are at some point in the construction stage (award, construction, or closeout). To this extent, the Department designs more than it can build if one were to look at one year as a snapshot. However, given the multi-year nature of project development, delays associated with grant and local funding issues, and delays associated with permitting, the Department is in line with best practice by having more projects in the development pipeline on annual basis relative to those in the construction phase. This ensures that SeaTran has a sufficient number of projects to fully utilize available construction forces given the inevitable delays that occur in the development stage.

[3] For projects completed with in-house crews, the capital projects project manager or another SeaTran project manager will manage construction.

Staff resource leveling across the program is performed currently on a somewhat ad hoc basis through priority setting by the Project Management, Project Control and Transportation Design Section. The design group follows a list of project priorities established by Project Management, Project Control, and Transportation Design Section; however, individual project managers tend to approach them with often conflicting demands and priorities.

Staff resource leveling at SeaTran is made difficult because of the grant funding process upon which the Department is heavily dependent. Uncertainty about the acceptance of grant applications and timing of approved funds impacts the ability to accurately forecast project start and completion dates. The Department's new project management system, once fully implemented, should help in establishing work task priorities that balance resources across the program.

b. Project substitutions and "rebalancing"

Another challenge to successful program management is handling change and uncertainty. Program change is often caused by fluctuations in available funding. In order to adjust the program to adapt to change, SeaTran T-staff performs periodic program "rebalancing." Rebalancing involves evaluating the status of grant applications and how far projects have progressed. Taking this information into account, T-staff determine which projects can be slowed to free up resources for other projects, such as "political" projects that arise outside the capital planning process.

In general, rebalancing considers that the City does not want to return unspent grant money to its funding sources, so projects that would lose funding by slowing them are often kept on track. Projects already in the construction stage are also not usually targeted because idling construction contracts is expensive. Most projects slowed through rebalancing have not yet reached the design stage.

No project has been canceled by rebalancing, but according to SeaTran's CIP Director, the Department is running out of projects that can be stalled without losing funding. This year, SeaTran was close to canceling a project that would have lost its grant money. The rebalancing process is not transparent or even formally structured. Rather, it is an ad hoc process taken up by T-staff.

Another source of program change is uncontrollable events (such as natural disasters and other emergencies). In general, the City and SeaTran have no specific financial resources or contingency plans in the event of natural disasters and other emergencies. Projects necessary as a result of these events tend to be funded at the expense of other projects in the capital program, leading to significant "rebalancing" and delays of other projects in various stages of delivery.

c. Major Decision Points in the Life of a Project

In practice, the development and delivery of the CIP differs somewhat depending on the type of project being undertaken. Major maintenance and safety projects may or may not involve obtaining grant funding (depending on whether they are individual projects or part of an Annual Program), while mobility projects almost always involve seeking grant funds. Also, mobility projects are subject to the "planning gap" that makes prioritization less transparent. Exhibit IV-4 and Exhibit IV-5 show the processes for both types of projects. Prior and subsequent sections of this report explain elements of the processes depicted in the flow charts.

Exhibit IV-4: Key Steps and Decision Points from Glimmer to Construction – Major Maintenance and Safety Projects

City Council sets budgets for Major Maintenance and Safety projects, taking into account "target level of investment" prepared by SeaTran.

Participants: City Council, T-Staff.

Major Maintenance and Safety projects determined and prioritized based on technical need and professional input.

Major maintenance projects ranked on structures index, pavement management system, and field input.

Safety projects ranked according to accident rates and field input.

Participants: SeaTran Program Directors, Technical staff.

20-year needs list compiled for Major Maintenance and Safety projects.

Projects ranked in order.

Participants: T-Staff, Planning and Project Development Section.

Grant-Funded Projects.
Needs list projects assessed for funding competitiveness.

Some projects are combined with others (e.g., a signal project, pavement project, and transit project may be combined to increase grant funding potential.)

This can cause projects to deviate from the technical priority order.

Participants: SeaTran Planning and Project Development Section.

Preliminary engineering and grant writing performed for grant competitive projects.

Designers assign preliminary scope and budget.

Participants: Planning and Project Development Section, Designers.

Annual Program (Non-Grant-Funded Projects)
Annual funding assessment conducted for non-grant-funded CIP projects.

Participants: T-Staff.

Funded and preliminarily scoped projects become SeaTran's proposed CIP.

When grant funding is secured, projects enter the CIP with a scope from the grant application.

Participants: Planning and Project Development Section, T-Staff, City Budget Office.

Council reviews and adopts CIP.

Often little change made to proposed CIP.

Participants: City Council.

Team assignment and/or design consultant selected.

This is where project manager initiates management of project delivery with other team resources.

Participants: Project Managers, Designers, Financial Analysts, Right-of-Way Staff, Environmental Staff, SPU Drainage Designers.

Detailed design is initiated and completed.
30/60/90 percent reviews.

Participants: Designers, Project Managers.

Financial rebalancing.
Driven by changes in local funding (sometimes caused by emergencies, such as landslides or earthquakes).

Entire program shifted to reflect new funding constraints and actual project progress.

Participants: T-Staff, Project Management and Control, Resource Management.

Project advertised and awarded, or assigned to city forces.
Under memorandum of understanding, SPU manages solicitation. PM evaluates and recommends award. SPU resident engineer assigned to project for construction oversight and change order management for contracted work.

Participants: SPU, Project Managers.

Notice to Proceed – construction begins.
SeaTran Project Manager manages in-house crews.

Participants: Project Manager, SPU Resident Engineer.

Construction Management.
Change order management.
Construction inspection.

Participants: Project Manager, SPU Resident Engineer.

Closeout.
Project Completion.

Participants: Project Manager, SPU Resident Engineer.

Ongoing Project Management, Public Involvement, and Monitoring and Reporting:

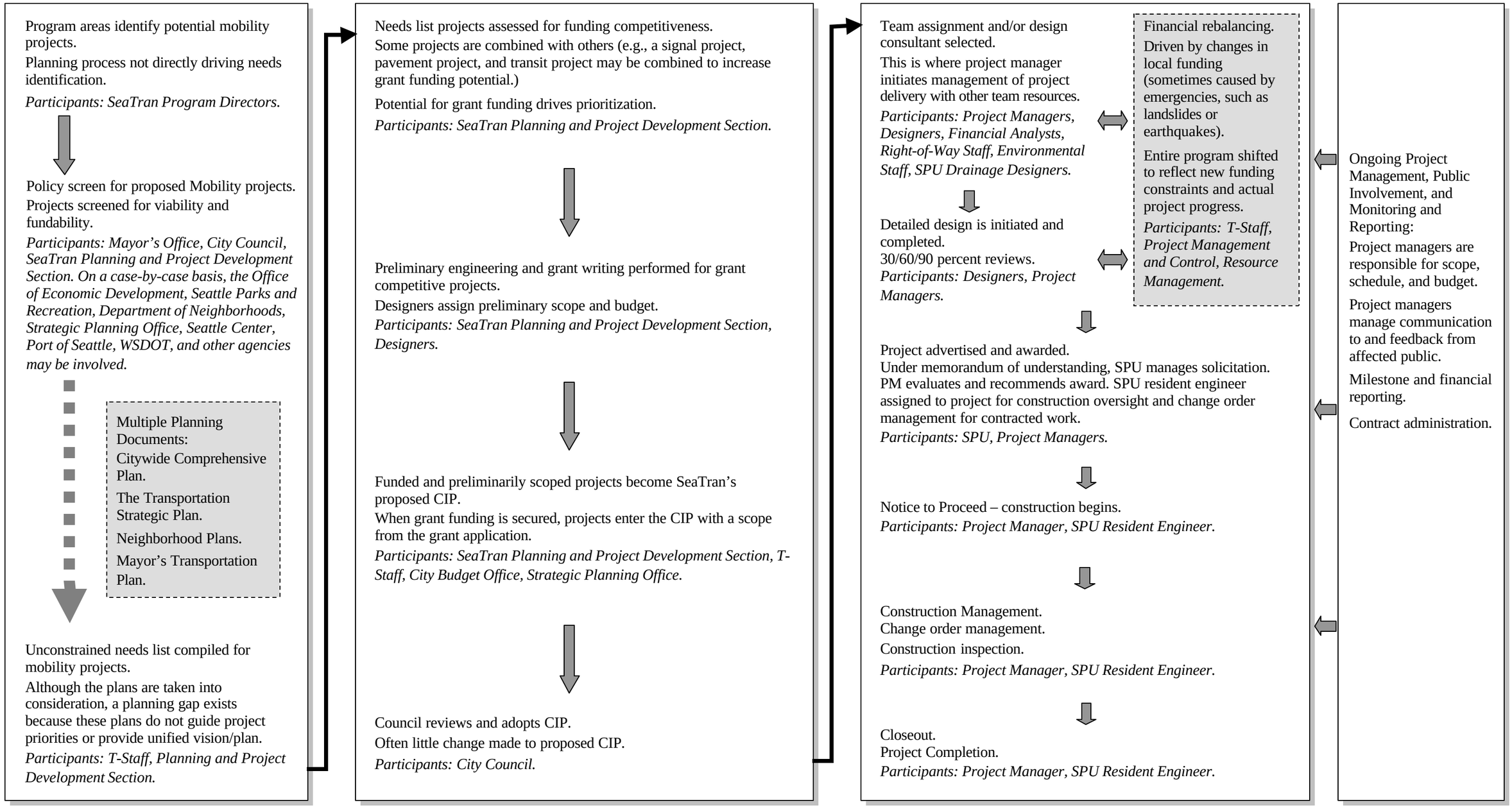
Project managers are responsible for scope, schedule, and budget.

Project managers manage communication to and feedback from affected public.

Milestone and financial reporting.

Contract administration.

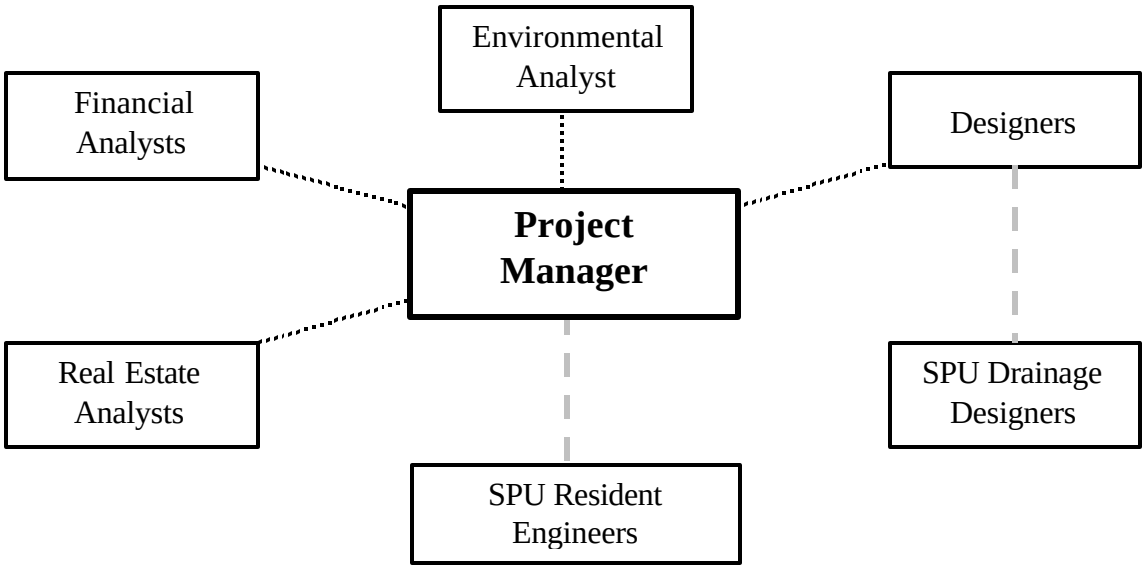
Exhibit IV-5: Key Steps and Decision Points from Glimmer to Construction – Mobility Projects



2. Project Management

Project management involves many of the same complex inter- and intradepartmental relationships that program delivery requires. However, whereas program delivery begins at the CIP development stage, in SeaTran project management does not begin until after a CIP has been formed. Exhibit IV-6 illustrates how SeaTran is organized for project management.

Exhibit IV-6: SeaTran Organization for Project Management



When a project has been programmed into the CIP and has a preliminary scope, several different SeaTran supervisors assemble a team for the project. The Manager for Project Management, Project Control, and Transportation Design assigns a project manager to the project; design supervisors assign designers to the project; and the Supervising Finance Analyst for CIP assigns a finance analyst to the project. Real estate analysts and an environmental analyst are assigned to projects as needed.

For most road projects, SeaTran formally requests drainage designs from the Director of SPU. After projects are advertised and awarded, SPU resident engineers are responsible for construction management and inspection.

The project management model and authority structure for project delivery has not been fully defined yet. Currently, project managers have limited control over any team members. Rather, team resources are supervised by functional managers for finance, design, construction, and so on. Design priorities are set by the Manager for Project Management, Project Control, and Transportation Design and managed among design staff by design supervisors. Priorities for drainage designers and resident engineers are

set outside the department, by managers in SPU. SeaTran has made progress toward "cradle-to-grave" project management. Although individual project managers have different styles and approaches, all managers are involved in individual projects from start to finish.

B. Issues and Findings

1. SeaTran needs to broaden/establish business objectives for CIP program management.

The current focus with regard to program management has been on the Department's "accomplishment rate." The accomplishment rate measures year-to-date cash expenditure against the annual budget. This is an input measure (dollars) that may help SeaTran and the City Budget Office (CBO) from a budgeting perspective but does not provide information on CIP delivery. Additionally, the accomplishment rate provides a one-year snapshot that does not adequately reflect the multi-year nature of project delivery and project finance.

SeaTran, in common with other departments, provides a quarterly milestone report with scheduling information. However, this does not track program delivery or project management accomplishments for the CIP implementation against the plan or policy and management objectives.

SeaTran needs to orient management of CIP delivery to CIP outcomes by establishing business objectives such as projects delivered, volume of construction, reduction of backlog, etc. This will require the organizational culture of the Department to shift toward an outcome-based approach. Tools such as the new project management system will help to manage and provide performance measurement in line with an outcome-based approach to program delivery. It will also require organizational recognition that delivery is not just a Capital Projects Division responsibility but a fundamental SeaTran-wide function.

2. It is too early to measure the success of the new organizational structure for CIP delivery and management.

SeaTran has had just over two years to establish its process for project management since engineering, project management, and support staff were transferred from SPU. The project management model is being refined. SeaTran and the Capital Projects Division are still adjusting to a new way of doing business. The project development lifecycle (generally four to six years) prevents quantitative analysis of the success of the new organizational structure for SeaTran and the new, albeit not fully functioning, cradle-to-grave approach to project management. The recommendations provided in this report, when implemented, can be used to provide a performance baseline from

which to monitor and improve program management and project delivery performance.

3. SeaTran has yet to stabilize and fully implement the cradle-to-grave project management model.

While this study did not involve a detailed evaluation of SeaTran's project management organization and procedures, it is clear that the new approach requires some refinement. SeaTran's organization for project management at present makes it difficult to hold any one individual accountable for scope, schedule, or budget. There are too many points along project delivery where team members are able to divest their responsibility. Designers cannot be held accountable for project scope as project managers add features to projects that address community concerns. SeaTran project managers cannot directly hold SeaTran designers directly accountable for schedule or SPU drainage designers and resident engineers. No one can be accountable for project budgets when they are established by preliminary engineering estimates based on limited scoping. Although fully implementing the Department's new project management system will provide a useful tool for program-level resource balancing and project-level scheduling, SeaTran should not expect the new system to solve these organizational accountability problems.

4. Change management (driven by funding uncertainty and other variables) complicates CIP delivery management and is not transparent or well communicated.

Program level "rebalancing" and resource leveling that slows CIP projects is not transparent; neither is the outcome communicated effectively to managers or policymakers. Program-level changes as the result of funding availability or other variables are not well understood by project managers and project team members are often unaware of changes in project budgets.

The Department lacks adequate planning and policies to provide for financial resources and overall contingency plans in the event of natural disasters and other emergencies.[4] These events have impacted SeaTran's budget and project schedules almost annually.

[4] A previous City administration determined that each city department would not maintain separate contingency funds. Rather, a central Emergency Fund would be made available from which to borrow money. Short of borrowing money from the City Emergency Fund, SeaTran addresses unforeseen circumstance on an ad-hoc basis.

C. CIP Program Delivery and Project Management Best Practices

The best practices survey identified the following best management practices for CIP program delivery and project management.

1. Best Practice: There are consistent budgeting and scheduling practices throughout the life of any project in the CIP.

Projects are the most amenable to change in the scoping stage and the least in the construction stage. If scopes are not well defined early, project costs and delivery times will increase as construction takes place. It is usually most efficient to take more time during the early stages of project development to consider issues such as levels of quality and permitting requirements that could add new features during the course of the project.

A consistent approach to budgeting and scheduling practices throughout the various phases in the life of a project can reduce or help manage the uncertainties in project development that can delay or stop projects.

Olympia, Washington has a standard system to building and monitoring capital projects called eNCOMPASS. The system consists of a series of screens that project development staff can use to enter projects to be automatically calculated using embedded estimating software that is regularly updated. This has allowed them to develop the capital program more quickly and also to provide a uniform presentation of materials for Council consideration.

Portland has a “cradle-to-grave” approach to project organization. Portland is in the early phases of a reorganization in which project managers are assigned to projects and responsible for coordinating project development, design, construction, and close-out activities. Project managers assemble teams as needed to deliver projects. This allows them to efficiently use design staff, but also maintain control over the accuracy of scope and schedule.

Program “rebalancing” due to changes in available funding undermines consistent budgeting and scheduling practices at SeaTran.

2. Best Practice: The organization has identified someone as responsible for the successful completion of the CIP and has granted the authority to take action when problems arise.

This can be a single Capital Improvement Manager or a small staff of people assigned to capital management. Ongoing administration of a capital program involves many people at many different locations throughout the City. Individual project managers can be held accountable for the success of their projects, but there needs to be a central

point of communication and coordination so that conflicts can be avoided and resources can be assigned when needed to solve problems.

Accountability sometimes takes on the negative connotation of having someone to blame. In fact, the most accountable people are those who actually enjoy what they are doing and strive to see that everything runs smoothly. That kind of person will take action to help project managers when they encounter problems. The Capital Improvement Manager is also the one who will have the most report information from project managers and will therefore be able to provide program information to policymakers in a timely manner.

In St. Paul, Minnesota, the Assistant City Engineer coordinates the budgets and schedules of the separate design sections in Streets, Traffic, and Bridges. He is also the liaison with the citizens' committee and oversees the internal committee that reviews all budget and scope changes for recommendation to the citizens committee and City Council. He has been in the role for several years and been able to establish a trust-based working relationship with citizens committees. He has also been able to focus the effort of independent functional organizations in the Public Works Department that might otherwise perform their work independently with the typical resultant inefficiencies.

SeaTran's Project Management, Project Control and Transportation Design Section effectively addresses this best practice.

D. Recommendations

The following recommendations are made to improve SeaTran's CIP program delivery and project management.

Recommendation 4. Broaden/establish SeaTran-wide business objectives for CIP program management and delivery.

- Manage against accomplishment of CIP outcomes by establishing business objectives such as projects delivered, volume of construction against categories of need, system condition, and reduction of backlog
- Focus on outcomes and the multi-year nature of CIP delivery as opposed to inputs such as the "accomplishment rate" which is based on one-year cash expended against budget.
- Undertake cross-departmental teambuilding to ensure consistency of goals and objectives by improving coordination and understanding between SeaTran CIP program management, the Department's financial management, Citywide financial management, SPU, and SPO.

The purpose of this recommendation is to establish SeaTran-wide business objectives for CIP delivery for which all Divisions are responsible. The measurement and accomplishment of these objectives should be part of department-wide business planning.

Teambuilding at the management level should be undertaken between SeaTran program management staff (T-Staff), Resource Management Division senior staff, and CBO, SPU, and SPO senior staff to increase understanding of collective duties, roles, and responsibilities for accomplishing SeaTran business objectives for CIP delivery. This teambuilding should address:

- Agreement on desired outcomes and outcome measures for SeaTran program delivery.
- Coordination of citywide planning efforts into cohesive approach to CIP development and project prioritization.
- Consistency between financial goals and program delivery objectives between SeaTran program management, Resource Management Division, and CBO.
- Improved coordination between SeaTran and SPU in the areas of drainage design and construction oversight.

The intent of the recommendation is to shift SeaTran's focus toward CIP program outcomes and hold management responsible for their accomplishments. Inputs such as the accomplishment rate are important from a financial perspective, but do not align CIP delivery efforts toward what the City is getting for its investment in transportation. The Department should expand beyond the current one-year snapshot focus of program delivery to a multi-year perspective given that this is the nature of project delivery and finance.

Recommendation 5. Establish a transparent process for and improve reporting of changes to the CIP.

- Establish procedures for reporting changes to the CIP to the Mayor's Office, City Council, affected City departments, SeaTran management, and staff depending on the type and magnitude of the change.
- Report changes made to the CIP, driven by funding uncertainty and other variables, such as earthquakes and landslides, regularly and clearly to project managers, City Council, and the Mayor's Office.
- Widen communication and participation in program-level "rebalancing" and resource leveling to improve reporting to project managers, City Council, and the Mayor's Office.

The intent of the recommendation is to establish procedures that will result in the consistent communication of changes to the scope, planned schedule, and cost of CIP projects. Who is to be informed and who would authorize changes to the CIP would depend on the size and nature of the changes.

The Department can improve the reporting of changes made to the CIP, driven by funding uncertainty and other variables, such as earthquakes and landslides, by regularly reporting them to project managers, City Council, and the Mayor's Office. A monthly report that outlines the number of projects affected (delayed, accelerated, or introduced), the dollars involved, and an assessment of the impact on CIP delivery goals would be an effective method.

At least one representative from Project Management, Project Control, and Transportation Design, City Council Staff, and Mayor's Office staff should be present during SeaTran program rebalancing meetings to increase transparency and provide a mechanism to report back to the appropriate levels.

The Department should establish procedures for addressing changes to the CIP resulting from natural disasters and other emergencies, given that these events have impacted SeaTran's budget and project schedules almost annually in recent years. Rebalancing as a result of these events can be made more transparent by the approach described above.

Recommendation 6. Strengthen project delivery management, organization, procedures, and accountability.

- Stabilize the Department's organizational structure and fully implement the "cradle-to-grave" project management approach.
- Conduct cross-functional teambuilding for project managers, financial analysts, right-of-way and environmental staff, and SPU resident engineers and drainage designers involved with CIP delivery to ensure a common vision and accountability for outcomes.
- Start to measure/track outcomes and look for opportunities to strengthen project management.
- Continue efforts to strengthen accountability procedures for changes in scope, schedule, and budget.
- Update the project management manual and encourage project management training programs to ensure consistency of approach and expectations.

While the scope of work for this study did not include a detailed review of SeaTran's project management, it became evident that improvements in this area could significantly benefit project delivery. The recommendations made in this area may not address all of the issues that a detailed review of project management would uncover; however, they are consistent with best practice and should yield marked improvement in SeaTran's project delivery.

The Department should empower project managers with the ability to control scope, schedule, and budget and hold project management teams accountable for project delivery. The cradle-to-grave project management approach should be strengthened by better

working relationships with design and SPU such that the project manager can be held accountable for scope, schedule, and budget.

Cross-functional teambuilding including project managers, financial analysts, right-of-way and environmental staff, and SPU resident engineers and drainage design supervisors would be an effective approach to improve working relationships by increasing understanding of collective duties, roles, and responsibilities for SeaTran CIP project delivery. This exercise could be used to develop common objectives and measurable outcomes for project delivery.

Project management outcomes should be tracked by the Department as a mechanism for accountability and a method to identify areas for improvements. A sample of project management performance measures is provided in Exhibit IV-7.

Exhibit IV-7: Sample – Project Management Performance Measures

Project Management Element	Candidate Measures
Schedule	• Deviation from planned schedule (days). • Length of time to design. • Number of milestone dates missed more than once.
Budget	• Design cost as a percentage of budget. • Construction as a percentage of overall cost. • Construction engineering as a percentage of construction cost. • Preliminary engineering as a percentage of overall project cost. • Change order costs as a percentage of overall project cost.
Scope	• Change in cost estimate at 30, 60, and 90 percent design. • Percentage of established project objectives met at closeout (based on project manager review).
Quality	• Number of change orders caused by design errors. • Results of citizen satisfaction survey
Team	• Number of conflicts escalated beyond project manager level.

The project management manual should be updated to reflect a consistent, proven approach to successful management and SeaTran should support the citywide effort to establish project manager training. In addition, resources should be developed for others involved with project delivery (financial analysts, right-of-way and environmental staff, and SPU resident engineers and drainage design supervisors) that describe processes, policies, and expectations.

V. Program Monitoring and Reporting

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This section describes the monitoring and reporting tools currently used by SeaTran for both internal communication and external communication. Recommended changes and CIP output metrics are presented in this section.

The following best management criteria for CIP program monitoring and reporting were used for evaluating SeaTran's current reporting practices:

- Monitoring and reporting should measure and provide a mechanism for Departmental accountability for the outcome and implementation (output) of the CIP.
- Metrics should show planned versus actual progress against CIP business objectives and program priorities. Measurement should show SeaTran's status against the overall backlog of needs.
- Metrics should show that projects selected implement long-range plans.
- Internal monitoring and reporting systems should report project level and program-level progress against budget and schedule, and track project scope at key milestones.
- Development of metrics should not create unnecessary additional work.

Study objectives addressed in section are:

- Recommend key metrics for SeaTran to report on.
- Determine the level and type of reporting that should be made to City Council and the Mayor's Office, and determine what changes in the CIP should trigger City Council notification.

A. Current Practice

1. Internal Monitoring and Reporting

Different reports need to be created for various internal purposes. Senior management needs to receive program and project-level reports in order to guide policy decisions. Financial analysts need reports in order to ensure compliance with grant funding requirements and adherence to budgets. Project managers need reports at the activity level in order to manage the project's scope, schedule, and budget.

SeaTran is currently transitioning several internal financial systems, which has complicated internal reporting. In 1999, the City shifted from SFMS to Summit to manage its budgeting system. The transition is still underway and SeaTran lacks key

reports for departmental decision-makers. Project managers in particular have not received monthly cost accounting reports since Summit's implementation.[5]

SeaTran is also in the process of moving to a new project management system, Project Office, that integrates staff schedules entered on an individual basis in Microsoft Project. Project Office will also be integrated with Summit, transferring cost and schedule information between the two systems. When fully implemented, SeaTran management hopes that Project Office will replace much of the manual effort that is currently required during the rebalancing process. Also, Project Office will eventually produce an "earned value report," which will show budget to actual figures or planned and billed activities. The earned value report will allow the Department to monitor budget status by program category (surveying is an example of a program category) and enable the Department to better balance resources.

While SeaTran management is fully committed to the change in a new system, there are a number of change management issues to be addressed during implementation. Some project managers and designers see the new systems as just additional work for them, while the benefits are seen mostly at the senior management level. Implementation of Project Office will also necessitate several culture changes. For example, designers will be required to program their time to projects in advance, rather than fill out time after it has been used on a particular project.

2. External Monitoring and Reporting

Like internal reports, reports prepared for external sources, such as the City Council, the Mayor's Office, or the public, serve different purposes. External reports both hold SeaTran accountable for its performance and also allow the department to communicate important information to policymakers, customers, and partners.

SeaTran produces two key reports for an external audience: the quarterly monitoring report submitted to City Council and the Capital Improvement Program itself, which is published for general consumption. Both reports were developed according to citywide standards established by CBO and City Council.

The quarterly monitoring report focuses primarily on the Department's "accomplishment rate." This reports on year-to-date expenditures, which is how much the Department has spent relative to its budget, how much money the Department has spent according to funding source, and how much money the Department has spent for each program. However, in accordance with a citywide movement, SeaTran has also begun reporting the number of five key "milestones" accomplished during the quarter:

- Project initiation.
- Start design.

[5] Representatives from SeaTran's Resource Management Division have made reports available on SeaTran's internal website. However, project managers reportedly have not been accessing the online reports.

- Construction contract awarded.
- Start construction.
- Finish construction.

This information is valuable, but could be improved to provide better reporting regarding CIP implementation and outcomes. Examples are provided in the recommendations section.

As a report or document for public use, the 2001-2006 CIP is an improvement over previous CIPs. The current CIP provides a clearer discussion of program goals and priorities and an analysis of funding by type of project. However, the CIP does not provide a clear tie to city transportation goals. Instead, the text of the CIP is devoted mainly to the discussion of inputs (money) with the remainder devoted to many pages of project listings. There is also a good explanation of how priorities are set, but it unclear how much weight is given to the different factors mentioned in the priority setting step.

The current CIP states that SeaTran's goals are to maintain the existing infrastructure, improve traffic flow, and improve mobility. There is also a statement that safety is important. The Mayor's Blueprint for Transportation contains a reinforcement of the goal to maintain existing facilities as well as a Quick Start program with the goal of improving access to and speed of transit. The Quick Start program is a series of projects that can be completed in the next one or two years. There is also a desire to leverage local funds to the maximum extent. The missing element in the current CIP is the identification and discussion of outcomes.

B. Issues and Findings

1. The CIP is not linked to, or measured in terms of, policy and planning objectives.

Outcomes from SeaTran's CIP are not currently measured to provide a mechanism for departmental accountability. Current reporting of the accomplishment rate and project delivery milestones provides input information (dollars) and schedule information (milestones achieved) but not outcomes (what the City is getting for its transportation investment).

To make the CIP program goals more meaningful, the outcomes that achieve those goals need to be measured to determine if the goals are being met and, if not, what can be done to meet them or revise them. Reporting, therefore, has to focus on the outcomes identified in the CIP development stage.

2. The CIP lacks program delivery metrics.

The Department lacks metrics that measure the output and the effectiveness of CIP delivery beyond the quarterly monitoring report that reports expenditures, and milestone accomplishments. Measures of outputs, such as number of projects delivered that were planned, and productivity (ratio of preliminary engineering to total project cost) are not currently part of CIP reporting.

3. The CIP lacks mechanisms for reporting changes.

The current reporting process does not report major changes to planned schedule, budget, and scope of the CIP or individual projects. The delivery metrics need to answer policymakers' questions regarding when a project is planned to be delivered and changes to that plan. The Department could improve the transparency of changes made to the CIP, driven by funding uncertainty and other variables, such as earthquakes and landslides, by regularly reporting changes to project managers, City Council, and the Mayor's Office as recommended (see Recommendation 4).

4. Changes to information systems are likely to improve SeaTran's capability to provide program- and project-level reporting.

The new accounting and project management information systems, once fully implemented, should increase the ability to report project-level and program-level progress against budget and schedule, and track project scope at key milestones. These systems will also aid SeaTran in the measurement and reporting of recommended outcome performance measures. However, developing the reports and agreeing on the performance measures can be accomplished regardless of the status of implementing the information systems.

C. Program Monitoring and Reporting Best Practices

The best practices survey identified the following best management practices for CIP program monitoring and reporting.

1. Best Practice: There are clear, easily read program and project status reports that match the level of detail needed by the expected audience.

Project managers need specific task detail in order to keep track of individual activities and cost and identify problem areas. Program managers need on-time/on-budget status reports from project managers. External reporting requirements depend highly on the needs and expectations of the audience.

a. Reporting to policymakers

In general, policymakers need to know if their policies are being carried out. At the most basic level, they are concerned with the public's trust and will want to know if staff completed what they promised. Elected officials also should be informed in a timely way about changes that affect commitments made to their constituents. Elected officials may also sometimes have a great deal of interest in specific projects and want the same information as the program manager on those projects.

b. Reporting to citizens

At one level, individual citizens are often most interested in when their street is scheduled to be closed or when their water is going to be shut off or when the road they use every day is finally going to be resurfaced. Newspaper status reports on active projects, Web site updates, and sometimes informational mailers have been used to provide this type of information.

At another level, citizens are interested in "what they are getting for the money." They want to know how much the City is spending on transportation, where the money comes from, and what is being delivered to the public for that investment. To this extent, citizens are similar to policymakers in that they are interested in outcomes from the CIP.

- Project managers in the cities interviewed are using a variety of techniques to keep track of project schedules and budgets for reporting to their program managers. The level of sophistication usually matches the complexity of the projects and size of the city. Smaller cities tend to use more informal project management systems.
- Program managers are using Microsoft Project in Portland and St. Paul. Kansas City is revamping its whole project management system with newly developed software to provide better project and program management information.
- Policy reports are tailored to local conditions by the program manager in St. Paul and Phoenix and generally cover the status of major projects. These reports cover the schedule and budget information requested by the citizen committees to whom they report.
- In Olympia, the city Web site contains project budget and schedule information in a simple, easy-to-read format. This information is accessible by individual citizens or can be used as a reference for staff members answering citizen inquiries.

SeaTran has not produced reports that satisfy policymaker and citizen interest in transportation outcomes.

2. Best Practice: CIP reporting metrics are based on the outcomes identified during the CIP development stage.

Many cities have pavement management systems and use them to identify needs at budget time. This usually includes a program goal statement that can be expressed in a variety of ways. If a pavement condition index is used, averages are generally used and those numbers are usually compiled separately for neighborhood streets and arterials. Some cities report on performance against a goal stated, such as the percentage of streets that are in poor, fair, good and excellent condition.

Portland's performance report shows a bar chart comparing the current year of maintenance backlog in miles compared to previous years and their goal. Portland's report includes a summary of a citizen survey that rates street maintenance quality for the last five years. This information can then be compared to the objective pavement rating numbers.

In Boulder, Colorado, the Metrics Report is a text discussion of how each of the goals for changing mode share, limiting congestion, improving mobility and lessening air pollution are being met. The discussion covers not only the numbers reported, but reasons for any variance from the goal. This allows policymakers to determine how well the CIP works in accomplishing their goals. The report includes more than the reporting of the outcome measure because there are usually more causes for a particular outcome than just the CIP.

Concurrency management requirements led Vancouver, Washington to set up its concurrency management ordinance as a performance management system. The ordinance requires allocation of capacity to new development based on measurement of corridor travel times compared to established level of service travel times. This resulted in a moratorium along one corridor and focused capital improvements and operational improvements to improve travel times. Corridor travel times are determined annually by a sampling technique that has been used in Vancouver and Clark County for three years. The results are reported annually to the Planning Commission and City Council. The report this year showed some improvement and was reported in the local newspaper with a front page headline stating, "Vancouver traffic improves . . . Rush-hour travel eases on two-thirds of roads, study finds."

SeaTran's current reports are focused on inputs, such as the year-to-date expenditures on the CIP, rather than outputs and outcomes from the CIP's investment in transportation.

3. Best Practice: Someone actually cares about the measurements being reported.

When reviewing program performance, policymakers need to know if the program did what it was supposed to do. Information about project cost and schedule should be

important to program managers and less so to policymakers and citizens unless there is a history of non-performance in those areas.

Compilations of individual project reports can frustrate both policymakers and citizens because they have to analyze the data to see the patterns. The best reports at the program level are addressed to someone who cares about the performance of the program and tells them if the program did what it was intended to do. Most cities surveyed report on this indirectly as part of their budget review cycle.

In Phoenix, Arizona, staff reports to the citizen boards that formulate bond measure proposals. The nature of the report is what projects have been completed and what did they cost. A similar informal reporting structure takes place in St. Paul, Minnesota. In both cases, a citizens committee has been directly involved in choosing which projects were built and is interested in whether or not they were done. While this kind of reporting is focused more on the outputs of the CIP rather than the outcomes, it is the report that they cared about.

Seattle citizens, City Council, and the Mayor's Office are interested in more information to evaluate SeaTran's performance. This study resulted in part from City Council's interest in better Departmental reporting of activities and accomplishments.

D. Recommendations

The following recommendations are made to improve SeaTran's CIP program monitoring and reporting.

Recommendation 7. Link CIP outcomes to policy and planning objectives identified during the CIP development.

- Measure and report on CIP outcomes in order to provide a mechanism for Departmental accountability.
- Metrics should show planned versus actual progress against CIP program goals and priorities, as well as indicate where the Department stands against the backlog of needs.

In order for SeaTran's CIP program goals to be meaningful, the outcomes that achieve those goals need to be measured. This will allow the Department to determine if program goals are being met and, if not, what can be done to meet them or revise them. Reporting, therefore, has to focus on the outcomes identified in the CIP development stage. Potential outcome metrics, consistent with SeaTran's expressed program level goals, are illustrated in Exhibit V-1. Implementation of this recommendation should be tied to SeaTrans business planning. Best practice would involve linking budgets to outcomes through performance measurement.

Exhibit V-1: Potential Outcome Performance Measures for Existing SeaTran Goals – An Illustration

SeaTran Goal	Potential Outcome Performance Measures
Maintain Infrastructure	• Workload: – Annual lane miles of improved streets against target. – Reduction in street major maintenance backlog. – Percentage of streets in good condition. – Cost per mile to resurface. • Pavement condition index rating improvement over set time period for residential as well as arterial streets. • Concrete street condition index rating improvement over set time period for residential as well as arterial streets. • Annual citizen survey of street conditions: – Roughness, shoulder condition, street maintenance quality, street lighting quality, street cleanliness. • Sidewalk improvement over set time period. • Bike path improvement over set time period. • Earthquake retrofitting over set time period. • Bridge painting meets standards.
Improve Traffic	• Improvement in average or total travel times in specific corridors. • Reduction in delays encountered at key intersections. • Citizen survey of traffic conditions.
Improve Mobility	• Specific mode split goals (X% auto, X% transit, X% bicycle, etc.) over an agreed upon period. • Citizen survey of mobility options.
Improve Safety	• Reduction in accidents or the accident rate. (Specific accident types such as pedestrian accidents could have more aggressive desirable outcomes approaching zero.) • Reduction in accident costs to an agreed upon level. • Citizen survey of traffic safety.
Quick Start Step One	• Improvement in the speed of and access to transit.
Maximize Use of Outside Funds	• Maintenance of or increase in historical levels of outside funding. • Stabilize level of local funds devoted to the CIP.

SeaTran will need to determine which measures best suit its program goals and objectives and which can be supported through the existing or planned information system. The American Public Works Association has outlined the following conditions conducive to successful capital improvement performance measurement:

- Performance measurement systems are positive and contribute to a learning culture rather than being used to punish poor performers.

- There is alignment between the mission, vision, and values of the organization and the day to day actions that implement them. This requires an understanding of the link between what the agency does and the needs of its customers.
- Leadership is critical in setting up performance management systems. Senior management is directly involved in setting goals and expectations.
- Effective internal and external communications are part of the organizational culture
- Accountability for results is clear and well understood.

Performance measures themselves should have the following characteristics if they are to be successful:

- Performance measures should provide information that is relevant to judging if goals are being met. This may require that there be more than one measure per goal.
- Their intended audience should easily understand performance measurements. Simple measures or charts are most easily understood, but should be accompanied by a text explanation of what the numbers mean and what their limitations are.
- Performance measures should provide a comparison to either prior years, benchmark agencies, or established goals.
- Performance measures should be reported at a time that allows learning to take place. A report on the previous cycle of activities needs to be used to make changes to the next cycle.
- Performance measures should be consistent and reliable if they are to be believable.

CIP program-level review should take place annually to review outputs achieved versus expected in each goal area. More detailed review can take place based on the desires of the CIP Director. For example, if the CIP Director thinks too much or too little time is spent in the project scoping phase, those times and associated costs can be accumulated and analyzed. The simplest program-level report is the one that compares actual performance against the outputs expected in each goal area. If 40 miles of streets were to be overlaid and only 20 actually were, the report should state this and the reasons for it. Of course, if projects are monitored regularly on the project level, the answer to that question should already be known. The Department Director should be interested in the outcomes in each goal area and be able to report to policymakers on the reasons for variance and actions to be taken in the next cycle to improve performance.

Successful progress toward the established outcomes will come from more than just the CIP. The Director of SeaTran is also responsible for operational functions that will play a role in accomplishing the desired outcomes. For example, the goal of improved mobility has a desired outcome of improved travel times. Operational adjustment of signal timing can be part of the reason for such an improvement. A capital project that increases the capabilities of operations personnel to control the system can also be part of the reason for

such an improvement. Both are necessary and people who report to the SeaTran Director accomplish both.

On the other hand, under the mobility goal, agencies outside SeaTran are more responsible for realization of the outcomes. In fact, there are several agencies with responsibility for transportation management in Seattle, including the Washington State Department of Transportation (WSDOT), King County, and Sound Transit. This is not a reason, however, to give up on measuring outcomes affected by others. Experience will show if the outcomes selected require too much explanation each year but not doing them does not allow experience to happen. Coordinating outcomes to measure with other agencies is desirable but waiting for others to join the program would be a mistake.

Recommendation 8. Develop, implement, and report on CIP program delivery metrics.

- Expand CIP program delivery metrics to address program delivery outputs.
- Develop and implement procedures for providing reports on changes in the CIP to staff, City Council and the Mayor's Office, based on the nature and type of changes.

SeaTran needs metrics that measure the effectiveness of program delivery beyond the accomplishment rate and milestone reports. Measures are needed that monitor and report on CIP outputs against planned outputs. These should address SeaTran's planned accomplishment of program, goals, planned versus actual delivery performance, and productivity. Exhibit V-2 provides a set of CIP output or delivery measures that could be used by SeaTran.

Exhibit V-2: Potential Program Delivery Measures

Potential Program Delivery Measures
• Number of projects let to construction by major SeaTran goal category (maintain infrastructure, improve traffic, improve mobility, improve safety, etc.) by year. • Value of projects let to construction by major SeaTran goal category (maintain infrastructure, improve traffic, improve mobility, improve safety, etc.) by year. • Number of projects planned in CIP versus number let to construction by year. • Value of projects planned in CIP versus value let to construction by year. • Productivity: – Ratio of preliminary engineering costs to dollar value of projects constructed. – Ratio of construction engineering costs to dollar value of projects constructed.

The Department can improve the transparency of changes made to the CIP, driven by funding uncertainty and other variables, such as earthquakes and landslides, by regularly reporting changes to project managers, City Council, and the Mayor's Office. A monthly report that outlines the number of projects affected (delayed, accelerated, or introduced), the dollars involved, and an assessment of the impact on CIP delivery goals would be an effective method.

Appendix A: Form of Government and Type of Funding Structure for Cities Surveyed

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City	Population	Form of Govt.	CIP Funding Source
Berkeley	102,743	Council – Manager	Grants – State Shared Revenue
Boulder	96,727	Council – Manager	Grants – State Shared Revenue
Eugene	137,893	Council – Manager	Grants – State Shared Revenue
Fort Collins	118,652	Council – Manager	Grants – State Shared Revenue
Kansas City	441,545	Council – Manager	Grants – State Shared Revenue
Long Beach	461,522	Council – Manager	Grants – State Shared Revenue
Olympia	42,514	Council – Manager	Grants – State Shared Revenue
Phoenix	1,321,045	Council – Manager	Bonds – State Shared Revenue
Portland	529,121	Mayor – Commission	Grants – State Shared Revenue
Renton	51,150	Mayor – Council	Grants – State Shared Revenue
San Jose	894,943	Council – Manager	Grants – State Shared Revenue
Seattle	563,374	Mayor – Council	Grants – State Shared Revenue
Snohomish Co.	606,024	Executive – Council	Tax base – Grants – State Shared Revenue
St. Paul	287,151	Mayor – Council	State Shared Revenue – Bonds
Vancouver, WA	143,560	Council – Manager	Grants – State Shared Revenue